BRITISH MEDICAL JOURNAL

LONDON SATURDAY JANUARY 22 1944

EMPHYSEMA OF THE LUNGS*

BY

RONALD V. CHRISTIE, M.D., D.Sc., F.R.C.P.

Professor of Medicine in the University of London; Physician to St. Bartholomew's Hospital

PART I

Emphysema is a progressive and incapacitating disease, and, although its description is precise and dogmatic in most textbooks, the majority of cases diagnosed on the post-mortem table are not recognized during life, many experienced physicians admitting that they do not understand the diagnosis of emphysema, except in its later stages. Even the term "emphysema" is ambiguous: in these lectures it is used to mean chronic vesicular or hypertrophic emphysema of the lungs, it being understood that acute emphysema, senile emphysema, and localized emphysema are probably separate and distinct entities. I will discuss first the nature of the lesion as shown by observation of the living subject as well as by necropsy.

Nature and Extent of the Enlargement of the Lung

The most obvious changes are in the alveoli, the walls of which appear stretched, thin, and in many places ruptured, so that the septa between adjacent alveoli may be reduced to small projections. It has been claimed that the rupture of the alveolar wall begins at the so-called alveolar pores, but whether or not this is true seems to be of little significance. Of much greater importance is the effect of this destructive process on the air sacs of the lung and on the volume of the lung as a whole, and several changes have been described:

(*a*) The normal lung lobule or air sac consists of an alveolar duct opening into the atrium, around which are placed the alveoli, and in health there is a sudden transition from narrow alveolar duct to wide atrium, so that the inspired air may be thrown as a jet into the more remote parts of this terminal segment. These lobules have been studied in detail by means of serial sections and of specimens injected with celloidin, and in emphysema it has been shown that the lobule is distorted and sometimes distended (Beitzke, 1925; Kountz and Alexander, 1934). The alveolar duct is dilated and funnel-shaped, so that air is no longer thrown into the atrium as a jet. If it could be shown that this jet of air does in fact serve a useful purpose in ventilating the lobule, it would be reasonable to suppose that this function would be impaired in emphysema.

(*b*) As the alveolar walls become thin and disappear the air sacs may lose their honeycomb structure and so be deprived of their supporting framework; this is especially true on the surface of the lung, where large bullae may be formed. Provided that the airways to these lobules and bullae remain patent, one would expect that very little pressure would be required to deflate them, and once deflated very little traction would be required to distend them. In other words, it might reasonably be supposed that these flimsy lobules would be more distensible than those lobules which had not lost their supporting framework of alveolar septa.

(*c*) Another important sequel to this dilatation of the air sacs is the increase of the volume of the lungs as a whole, which is usually obvious on the post-mortem table: the large fluffy lungs strongly suggest that during life there is an increase in the amount of air they contain. This amount can be measured, and early in the present century several investigators showed that there is usually an increase in the residual air in emphysema. But the residual air is the amount of air left after a forced expiration, and it is well known that patients with emphysema may have great difficulty in forcibly emptying their lungs. A more significant measurement is the amount of air in the lungs at the end of an ordinary quiet expiration; for this is their true air content during life, while the residual air is the result of respiratory gymnastics and may have no relation to the normal size of the lungs. In the accompanying Chart are shown the results of measurements of the lung volume and its subdivisions in 8 patients suffering from emphysema; it is clear that the amount of air in the lungs was increased in all of them, although only very slightly in several. For instance, the increase was slight in the case of S. H., and yet he was an evident case of emphysema, with dyspnoea on the slightest exertion; while in C. N., a less severe case of emphysema, the volume of the lungs was greatly increased. In none of these cases was the increase ever as great as the volume of a normal lung in full inspiration. These findings have been confirmed by several investigators, and it is clear that in emphysema the lungs as a whole usually contain more air than they should, but this never amounts to more than the increase which occurs in the size of the lungs of a normal individual when he takes a breath of moderate depth. (Hurtado, Fray, and McCann, 1933; Christie, 1934; Anthony, 1936; Cournand, Lassen, and Richards, 1937.) There is certainly never evidence of true over-distension or overstretching of the lungs as a whole, and sometimes

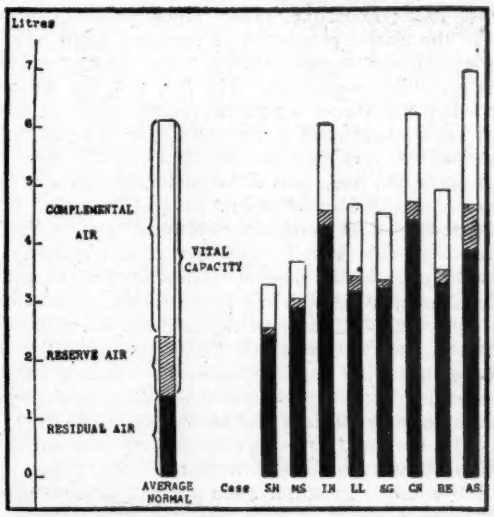


Chart showing the lung volume and its subdivisions in emphysema. Cases are arranged from left to right in order of severity of dyspnoea.

* An abridged version of the Goulstonian Lectures delivered before the Royal College of Physicians on March 4, 9, and 11, 1943.

in even severe emphysema there is no enlargement, but this is uncommon. On the post-mortem table the lungs seem to be greatly enlarged mainly because they do not collapse, and the microscopical appearance of gross over-distension of the alveoli must be due chiefly to destruction of the alveolar walls and the fusion of air spaces.

We can conclude from these various observations that the emphysematous lung is deformed in at least three ways. First, many lobules or air sacs are misshapen and the alveolar ducts are dilated, so that air is no longer thrown into the atrium as a jet. Secondly, the septa between alveoli may disappear, so that the supporting framework of the air sac may be lost. These air sacs or bullae then become comparable to bags of tissue paper, which are easily compressed and easily dilated. Thirdly, the amount of air in the lungs is usually increased, but this increase is not proportionate to the severity of the disease, nor is the volume of the emphysematous lung at rest ever as great as the volume of a normal lung in full inspiration. Thus, whatever may be its microscopical appearance, the lung as a whole in emphysema is not overstretched or over-distended any more than a normal lung is over-distended or overstretched when a breath of moderate depth is taken.

Changes in the lumen of the bronchi and bronchioles also occur, but these are not constant. The terminal bronchioles as well as the alveolar ducts are usually dilated, and this may extend up to the smaller bronchi, producing a picture resembling cylindrical bronchiectasis. The state of the medium and larger bronchi is, however, very variable, and depends more on the degree of bronchitis than on the degree of emphysema, although some atrophy and dilatation are usual in severe cases.

Elasticity of the Lung

Changes in the elasticity of the emphysematous lung were first suggested by a Fellow of our College, William Watson, in 1795. When the thoracic cage is opened on the post-mortem table the lungs do not collapse, and this alone would appear to be proof that the normal elastic recoil of the lung had been lost. However, more detailed observations on the pulmonary elasticity made by measuring the force required to inflate and deflate the lung, have given conflicting results in emphysema (Tendeloo, 1925; Loeschke, 1928; Thies, 1932). Considerable changes in the elastic properties of the lung occur after death, and the significance of post-mortem measurements of elasticity has been seriously questioned. The fact that the lungs do not collapse when the thorax is opened has been said to mean only that they are overstretched in the same way as a spring may be overstretched and yet maintain much of its elasticity. Histological study of the lungs gets us no further, as there is the same disagreement among morbid anatomists as to whether the elastic fibres are destroyed or merely overstretched; nor do the morbid appearances indicate whether loss of elasticity is an early or a late manifestation of the disease. These points are not merely of academic interest, as, if it can be shown that loss of elasticity is early and complete, many of the changes in emphysema can be explained, and for this reason I have measured the elasticity of the lung during life in three cases of pulmonary emphysema. The method used has been described elsewhere and its accuracy has been confirmed (Christie and McIntosh, 1934; Paine, 1940a, 1940b). It is based on the simple observation that the intrapleural pressure is a direct measure of the tension or elastic recoil of the lung. In emphysema the intrapleural pressure is not always negative as it is in health; even at the end of a full inspiration the intrapleural pressure may be the same as that of the atmosphere, and it is not altered when the lung is collapsed by a pneumothorax. These phenomena can only mean that the elasticity of the lung in emphysema may be entirely lost at a comparatively early stage of the disease (Christie, 1934).

It is usually assumed that any loss of elasticity is secondary to over-distension—an assumption which is unsound, as the lungs as a whole are neither overstretched nor truly over-distended. It is not generally realized that the converse is more likely to be true: the enlargement of the air sacs and the fact that this enlargement is most conspicuous at the periphery of the lung can be fully explained as being the direct result of loss of elasticity. That this is so is apparent if it is remembered that, in health, distension of the lung is maintained by traction of the chest wall and diaphragm, and this traction is counterbalanced by the elastic pull of the lungs. It follows that if these forces are abolished, as occurs when an artificial pneumothorax is given, expansion of the thoracic cage is to be expected, as well as collapse of the lung. That considerable expansion of the thoracic cage does in fact occur while an artificial pneumothorax is being given can be shown if the patient breathes from a recording spirometer; the air displaced into the spirometer is only about half of what is injected into the pleura, and the rest must have been utilized in expanding the thoracic cage (Christie and McIntosh, 1936). It is clear, therefore, both from first principles and from experiment, that loss of pulmonary elasticity in emphysema could be the direct cause of expansion of the thoracic cage.

Loss of elasticity could also explain the real over-distension of air sacs, with bulla formation which occurs on the surface of the lung. With loss of elasticity the expanding force is no longer equally distributed, and equal expansion in different parts of the lung should not be expected. In fact, the greatest expansion should occur where the force is applied, and this is at the surface of the lung. With each inspiration one would expect the superficial air sacs to be strained and stretched to a greater extent than the air sacs deep in the lung, and with this process going on for months and years, it is easy to understand the formation of bullae on the surface of the organ.

Pulmonary Circulation

Extensive changes are described in the pulmonary circulation. Many of the capillaries are torn and obliterated, and there is usually widespread atherosclerosis of the pulmonary vessels. A great deal has been said and written on the relationship of this vascular destruction to hypertrophy of the right ventricle, and, although this controversy may be of importance with regard to the aetiology of cor pulmonale, it seems to be of little significance in emphysema. All are agreed that the pulmonary vascular bed is diminished in emphysema and that the work of the right ventricle may be increased, but this does not mean that the total blood flow through the lung is diminished. If it were reduced the output of the left ventricle would also be reduced, and there is evidence, which I need not describe, that this does not occur until heart failure supervenes.

The lymphatic circulation in emphysema has received but scant attention. The peripheral lymphatics may show cellular infiltration, and the characteristic pigmentation of the lung probably reflects deficient lymphatic drainage.

Distribution of the Lesion

To the naked eye the lesion appears to be most pronounced on the surface of the lungs, especially along the margins, where large bullae may be apparent. Under the microscope, however, it is clear that the changes we have been discussing extend throughout the lung, although the dilatation of air sacs is most conspicuous at the periphery. Characteristic changes outside the lungs have been described. The visceral pleura is thin, flimsy, and atrophic. There is usually a moderate degree of kyphosis, involving all the thoracic vertebrae, which is in contrast to senile emphysema, in which the curvature is as a rule upper dorsal. The vertebral cartilage may be thin and compressed anteriorly, where there may be lipping of the vertebrae. Perhaps partly owing to this curvature, the ribs are widely spaced and run horizontally, and their cartilages frequently show ossification or become elongated and less elastic (Kountz and Alexander, 1934).

Haemo-respiratory Exchange

By far the most important disturbance of function in emphysema is an inability to ventilate the blood, and this is usually apparent many years before the patient reaches the pathologist. The simplest way to measure deficient ventilation in the lungs is to analyse the arterial blood, for this is what the lungs have ventilated. This has been done on many patients with emphysema (Meakins and Davies, 1925; Peters and van Slyke, 1931; Hurtado, Kaltreider, and McCann, 1935); in the accompanying Table are described the results of such an analysis in two of the patients whose pleural pressure had been measured and the elasticity of whose lungs was found to be destroyed, and in another even more severe case. These three

cases have been chosen as they represent moderate emphysema, severe emphysema, and emphysema in its terminal stages. The first (I. H.) had the obvious symptoms and signs of emphysema, but under conditions of rest there was no dyspnoea and no cyanosis. He could walk around the ward, but if hurried became dyspnoeic. His haemoglobin was normal in amount

The Arterial Blood in Emphysema. (For Methods used see Christie, 1934)

Case	Oxygen			Carbon Dioxide				Remarks
	Capacity	Content	Saturation	Content (Whole Blood)	Content (Plasma)	p. CO_2 (calculated)	Alveolar p. CO_2	
	Vols. %	Vols. %	%	Vols. %	Vols. %	mm. Hg	mm. Hg	
I. H.	19·4	17·5	90	51·4	62·6	47	39·3	
	21·0	19·4	92	47·2		43 44	38·5 45·4	
S. H.	26·4 28·6	21·6 22·4	82 78	53·1 51·1		83 73	71 68	Saturation 102% when breathing 100% oxygen
H. R.	20·9	15·1	72	74·5	101·7	93		Venous blood without stasis
				74·1	88	90 84 91		After venesection of 900 c.cm.

but only 90% saturated with oxygen, which suggests a slight impairment of oxygenation.

The second (S. H.) was a much more severe case of emphysema; he was short of breath on the slightest exertion, there was considerable cyanosis, and the changes in the arterial blood were more striking. The saturation of the blood with O_2 was only 80%, but this anoxaemia could be relieved by oxygen, which is characteristic of emphysema and is, of course, proof that the cause is some impairment of ventilation of the blood in the lungs. In an attempt to compensate for oxygen lack the amount of haemoglobin was increased; the oxygen-carrying power of the blood was 27 vols.%, which is equivalent to a Hb value of over 130% according to any of the ordinary standards. There was also a spectacular increase in the pressure of CO_2, both in the blood and in the alveolar air. This increase in CO_2 in the alveoli is, as I will stress later, characteristic of severe emphysema, and is proof that the cause of the accumulation of CO_2 in the blood is deficient ventilation, and not any barrier between the blood and the alveolar air.

The third case has been included because it represents the most marked disturbance of haemo-respiratory exchange in emphysema which, to the best of my knowledge, has ever been described. He was a typical case of advanced emphysema, and was critically ill, with severe heart failure. The oxygen saturation of his arterial blood was 72% and the pressure of CO_2 lay between 84 and 93 mm. Hg. Not only did he show a compensatory polycythaemia but also a compensatory increase in the bicarbonate reserve, without which he would have suffered a fatal acidosis. This combination is often found in severe cases of emphysema, and in my opinion is another illustration of how confusing is the practice of defining acidosis or acidaemia as a decrease in the alkali reserve or CO_2-combining power, and defining alkalosis or alkalaemia as an increase in the CO_2-combining power. In emphysema the alkali reserve or CO_2-combining power may be raised to over 110 vols.%, with a corresponding reduction in the plasma NaCl, and yet the patient, far from having an alkalosis, is hovering on the brink of acidosis. In the van Slyke classification of acid–base balance and its disturbances this condition would be called a compensated gaseous acidosis, which is obviously what it is in spite of the alkali reserve.

These are the important changes in the blood which occur in emphysema: in severe cases there is gross deficiency in both oxygen absorption and CO_2 elimination, and in the milder cases this deficiency is manifest only when the demands of metabolism are increased by exercise. The defect appears to lie in deficient ventilation of the alveoli rather than in any barrier between the alveolar air and the blood.

Cause of Impaired Haemo-respiratory Exchange

Many explanations of the impairment of aeration of the blood in emphysema have been given, but most of them are based only on conjecture and can be shown to be unsound:

(*a*) It has been suggested that the respiratory musculature is incapable of properly ventilating the lungs for the same reasons that the vital capacity and chest expansion are diminished; but the blame cannot be placed on the muscles of respiration, as the amount of air drawn into the lungs with each breath and during each minute is normal or even increased in emphysema. Diminution in vital capacity cannot therefore be the cause. The fault must lie in the lungs, as for some reason the air which is inspired does not properly ventilate the blood.

(*b*) It is obvious that the defect cannot be due to any barrier to the transfer of gases across the pulmonary epithelium, as if this were the cause CO_2 would increase in the blood but not in the alveoli. The fact that changes in the blood are associated with proportionate changes in the alveolar air rules out any suggested possibility of a barrier.

(*c*) An explanation which is commonly given is that with so many alveoli destroyed there is insufficient functioning lung. Many investigations of haemo-respiratory exchange have been made in patients with pneumothorax, pneumonectomy, and other conditions in which the amount of functioning lung is greatly reduced. Impairment of gaseous exchange, mainly affecting the absorption of oxygen, is found when the reduction in the volume of the lungs is so extreme that the tidal air or the amount of air breathed is diminished (Christie, 1936; Cournand and Berry, 1942). This is in contrast to emphysema, in which there is no diminution in the amount of air inspired and the elimination of CO_2 is impaired to the same extent as the absorption of O_2. "Diminution of the amount of functioning lung" or "diminution in the respiratory surface" cannot therefore explain the changes observed.

(*d*) Diminution in pulmonary blood-flow has been suggested as the cause. I have already stated that no such diminution occurs until heart failure supervenes. The amount of air entering the lungs is normal or even increased, so any diminution in pulmonary blood-flow would naturally lead to over-ventilation of the blood and not under-ventilation.

(*e*) A much more reasonable explanation, and one which is widely accepted on the Continent, is that the air sacs are not properly ventilated—partly because they are big, but mainly because the alveolar ducts are distorted (Beitzke, 1925; Kountz and Alexander, 1934). It is true that in emphysema the sudden transition from narrow alveolar duct to wide atrium is lost in many of the air sacs; and it is claimed that the air is no longer thrown in as a jet and the more distant alveoli are therefore not properly ventilated. This has been named the "stratification" theory, so called because it assumes a gradient of ventilation in the lobule, those parts next to the alveolar duct being over-ventilated and the parts further away being under-ventilated. This sounds reasonable, but the validity of this theory of stratification obviously depends on the assumption that in health there must be circulation of air in the air sacs and alveoli, and that diffusion alone is insufficient to maintain adequate exchange of gases in the lobules. The diffusion of gases is governed by well-defined laws, and it can be calculated that, even if the lobule is 1 cm. in diameter, diffusion alone would ensure the transport of gases across the alveolar space with a gradient of less than 1 mm. of Hg. The details of this calculation, together with other evidence which casts doubt on the stratification theory, have been published elsewhere, and it would appear that defective ventilation of the lobule cannot account for the extreme impairment of gaseous exchange observed in emphysema, in which the pressure of CO_2 may be raised by 30 or 40 mm. of Hg (Christie, 1939).

(*f*) Increase in the volume of the lungs has been suggested as the cause of impaired ventilation, on the assumption that it is more difficult to ventilate a large room than a small one. It is certainly true that in emphysema the amount of air remaining in the lungs at the end of an ordinary expiration is usually somewhat increased, and this explanation may therefore appear reasonable. Physiologists have paid but little attention to the significance of the amount of air in the lungs,

and I will not discuss the various factors involved. It can be said, however, without fear of contradiction, that, provided ventilation is distributed evenly throughout the lungs and alveoli, an increase in lung volume can in no way impair haemo-respiratory exchange. Increase in lung volume could only diminish the fluctuation in the concentration of alveolar gases which occurs during inspiration and expiration. The simile of the large and small room is fallacious, for if you have the same number of people in the small room as in the large room, and the same amount of air used for ventilation, there will be no significant difference in the atmosphere of the two rooms. In any case, increase in lung volume when it occurs is essentially due to increase in the size of individual lobules, and, as I have already stated, diffusion alone could maintain adequate gaseous exchange in a lobule much larger than the average size in emphysema.

(*g*) An increase in the respiratory dead space has been suggested as the cause of impaired haemo-respiratory exchange, but there is ample evidence that any increase in the anatomical dead space—i.e., the space occupied by the respiratory passages down to the bronchioles—is too small to be of practical significance (Hoover and Gammon, 1915). I will not enter into a discussion on the meaning of the physiological dead space. Most physiologists will agree that those who claim an increase in physiological dead space in emphysema are merely stating in a complicated way that the distribution of ventilation is unequal. In the normal individual the distribution of ventilation is remarkably even throughout the lungs, and consequently samples of alveolar air taken after expirations of varying depths are more or less uniform in composition. This is not the case in severe emphysema: the deeper the patient expires the higher is the CO_2 content and the lower is the O_2 content of the "alveolar air," and these patients show the apparent paradox that, although the amount of air inspired is normal or even increased, the alveoli are under-ventilated. That part of these lectures which deals with the analysis and interpretation of these observations is discussed elsewhere; the conclusion which has been drawn from them is that much of the inspired air is deflected to the enlarged air sacs and bullae, the walls of which are avascular and which are therefore not in contact with the pulmonary circulation. This wastage of ventilation on functionless air sacs cannot be defined as wastage due to increase in physiological dead space, as there is nothing physiological about an emphysematous bulla. Nor can it reasonably be called increase in anatomical dead space. If a definition is wanted I would prefer to give as the cause of impaired haemo-respiratory exchange in emphysema the formation of a pathological respiratory dead space, consisting of bullae and other air sacs which are not in contact with the pulmonary circulation. In very severe emphysema it is possible that all of the inspired air enters this pathological dead space, so that haemo-respiratory exchange would depend mainly on diffusion. In less severe cases it is probable that only some of the inspired air is wasted in this way.

Dyspnoea

The cause of dyspnoea in emphysema is clearly stimulation of the respiratory centre by the CO_2 retained in the blood. Under resting conditions the patient with emphysema either can just get rid of the CO_2 he is forming or, if not, he can compensate by increasing his alkali reserve; and in either case he is not dyspnoeic, because the acidity of his blood is normal. When he exercises, however, he cannot eliminate the extra CO_2 he forms; a gaseous acidosis occurs, and dyspnoea must result. In the absence of bronchospasm there is no orthopnoea, because there is no pulmonary congestion, which is the cause of true orthopnoea.

(Part II, concluding the lectures, will appear in next week's issue, with the list of references.)

The urgent need to prepare a new generation of Jewish physicians, especially in view of the tragic extermination of European Jewry, was urged by Prof. Bernhard Zondek of the Hebrew University when he recently opened the annual conference of the Palestine Jewish Medical Association. The conference was devoted mainly to discussing the problem of establishing a world-wide organization of Jewish physicians with its chair in Palestine. It is planned to issue an English edition of the Jewish medical journal *Harefuah* to be distributed among Jewish doctors throughout the world.

SUPERVISION OF PREGNANT WOMEN IN FACTORY EMPLOYMENT

BY

J. V. O'SULLIVAN, F.R.C.S., M.R.C.P., M.R.C.O.G., M.D., M.A.O.

Obstetric Surgeon, City of London Maternity, Queen Mary's, and Bearsted Memorial Hospitals

AND

L. B. BOURNE, M.R.C.S., L.R.C.P., D.A.

Works Medical Officer

The employment of pregnant women has become of vital importance at the present time, and we think it will be of interest if we record our experience in a factory concerned with a specialized industry (light engineering) in which an ante-natal clinic has been established to supervise women employees. It is realized that the figures are small, but we feel that the time has come for a very careful investigation into all factors connected with pregnancy among industrial workers. To obtain sufficiently large figures from any one industry might take so long that much of the value of the ultimate findings would have lost their importance.

We have attended a total of 178 pregnant women, who have come from North-East London. Of these, 90 have been delivered in the first year—82 in hospital and 8 at home—and the greater number have been followed up after delivery to assess any ill effects. All were employed in such work as soldering, welding, assembling small machine parts, etc. Their heaviest jobs were operating capstan lathes and drills. Some of the workers are engaged in a specialized form of assembly in workshops where the temperature at any time is roughly 10° Fahrenheit higher than normal. A full-time factory medical officer is always at call for emergencies, and there is an adequate staff of State-registered nurses (a proportion of whom are certified midwives), who undertake to deal with normal emergencies of industrial medicine.

The Ante-natal Clinic

With the ever-increasing number of pregnancies being reported to the surgery nurses, it was decided—after consultation—that the most satisfactory arrangement would be to set up an ante-natal clinic within the factory. Women reported their pregnancy to the surgery nurses, to the medical officer, to the welfare department, or direct to the midwife in charge of the clinic. Arrangements were then made for their examination and confinement. If they wished to be confined at a hospital—and the larger proportion did—an appointment was made for them, and they were given a covering letter when they went to book at the out-patient department. Having booked a bed and made financial arrangements with the hospital almoner, the women then continued to receive routine examinations at the works ante-natal clinic until such time as they left their employment. One of us (Mr. J. V. O'Sullivan) visited the factory at fortnightly intervals in order to examine these cases. Later, the scheme was enlarged to include the treatment of gynaecological cases. Women from all the factory departments have taken advantage of the scheme, and they include clerical and canteen staffs and cleaners, as well as the factory bench operators referred to above.

Wherever it was deemed necessary, lighter work or shorter hours were advised, and the management put such medical suggestions into immediate practice. We consider this to be of great importance in the supervision of women's health in factories.

We first made a general rule that all patients should cease work at the fifth month of pregnancy, but as time went on we found that most of them wished to continue at their work in later pregnancy, and as they showed no evidence of fatigue or ill-health we permitted them to do so under the special supervision provided. It would appear that so little is the health of experienced workers affected by pregnancy that they continue to work on night shifts without any apparent strain.

It was felt, however, that this was inadvisable, and it is therefore no longer permitted when the patient is known to be pregnant.

All pregnant women, of course, had the advantages of the extra nourishment and vitamins distributed through the Government scheme. The local health authorities have co-operated by allowing us to set up a distributing centre for vitamins and cod-liver oil within the factory. Many women previously complained that they were unable to take full advantage of the Government scheme on account of the time they spent (with consequent financial loss) in travelling to the various centres. The nursing staff have been able to find cases of pregnancy earlier than if these women had reported to outside ante-natal clinics in the usual way.

The management of the firm has permitted secretarial assistance sufficient to arrange for all appointments, admissions, etc., into any hospital chosen by the woman. This is, of course, of particular value in time saved, for she would otherwise have to go and arrange bookings and appointments herself.

Preparatory Routine

At the ante-natal clinic the usual routine investigations, such as blood pressure, urine testing, etc., were carried out. Originally, routine Wassermann tests were done at the first visit. It was found that this was not wholly satisfactory, as the question of future infection at any given time had to be considered. It was not practicable to carry out a routine Wassermann test at each subsequent visit, and so the present policy is to leave it until there is the slightest suspicious clinical sign. It is the custom to make a routine Wassermann test in all cases of toxaemia of pregnancy (or in any case of an unmarried pregnant woman). In view of the present abnormal living conditions and the breaking up of normal home and family life, the greatest possible vigilance must be exercised by all in attendance on ante-natal patients. We have had only one positive reaction in 43 cases to date. Clinical signs had suggested this, and the W.R. confirmed the necessity for treatment. We would stress the absolute necessity that the test be done by pathologists who have specialized in this field. All our pathological investigations and *x*-ray examinations are carried out at one of the large general hospitals.

We feel, at the end of the first year, that this clinic has been of great assistance to the working pregnant women in the factory. It has saved them time and money, and many working hours.

A pregnant patient generally reports to the surgery in the unit in which she is working. The sister-in-charge communicates with the sister in charge of the ante-natal clinic, and an appointment is arranged convenient to the patient and to the demands of routine of the shop in which she works. At the interview with the sister at the clinic full particulars are taken, the patient's local practitioner is informed that this patient has sought advice, and she is then booked to see the consultant at his next visit. Records are kept of all findings, and of the patient's general condition, the type of work she is doing, and her financial position. She is provided with simple instructions as to her personal care, hygiene, feeding, etc. Next a bed is booked for her at the hospital of her choice. Some hospitals prefer to see the patient once early in pregnancy, and then return her to the works clinic. Later in the pregnancy she returns to the hospital with full records as to her progress while she is under our care. After the patient is delivered, she is followed up by the department as to her general health and the possibility of returning to work, and is given information as to day nurseries in her district, etc. Co-operation from the welfare department is whole-hearted, and in this way the patient can be afforded financial assistance or can be permitted to take advantage of all schemes at present available.

Employment Restrictions

The College of Midwives in Dec., 1940, issued a leaflet on the "Restriction of Employment of Women Before and After Childbirth." In this it suggests: (1) four weeks' rest before the expected confinement; (2) eight weeks' absence from the factory after the birth of the child. (The period permitted under the Public Health Act, 1936, is four weeks.) The College believes that much could be done to make the position of pregnant women easier, particularly as regards financial assistance by the State. It is of interest to note that the proposals adopted at the General Conference of National Labour Organizations of the League of Nations convened at Washington by the Government of the United States of America on Oct. 29, 1919, which binds the countries that ratify it to prohibit the employment of women six weeks before and six weeks after childbirth, and to make provision for their maintenance, was never ratified by the British Government. So far as this country is concerned, there seems to be no standard laid down for the care of working women who become pregnant. The issue of the College of Midwives leaflet was advisory only, and no further steps have been taken by any of the authorities.

The Union of South Africa has dealt with this question through a Factory Act which includes provisions far beyond those in force in this country.* In Germany, too, it appears that the Reich Ministry of Labour ensures the protection of all female workers. It prohibits the employment of pregnant and nursing mothers on jobs which might prove harmful to them. Every woman must be completely exempt from every kind of work for six weeks before and six weeks after the birth of a child. This period is increased to eight weeks in the case of nursing mothers. The nursing of children is encouraged by the granting of a paid nursing period. The law prohibits the employment of pregnant and nursing mothers on overtime, night work, and holiday work. It also extends protection against dismissal. It is a punishable offence to dismiss a woman because of pregnancy, and she must not be given notice of dismissal for other reasons from the beginning of pregnancy until four months after childbirth. Unfortunately this law was modified to apply only to women of German nationality, and with a few exceptions it did not include Poles, Jewesses, Gypsies, etc., who were working under forced labour conditions in the German factories. All they were permitted to do was to refuse to continue to work if they could prove they were likely to be confined within the next two weeks, and they were allowed freedom from employment for six weeks after confinement. It seems likely that the majority of the foreign women working in Germany worked until 8½ months pregnant. The conclusion one can draw from this is that Germany valued female labour, and particularly the breeding of healthy offspring.

At the present time there seems to be no special standard laid down for the care of working women who become pregnant, apart from the above. When pregnant women are employed it is of vital importance that they be carefully supervised by experts, and only under these conditions is it fair to allow women to continue to work in factories in the later months of pregnancy. Our experience shows that no women have come to any apparent ill-health during their pregnancy or labour from doing work in this factory. We think this point is of great importance in the present emergency, because many of the women are highly skilled in their work, which they have been doing for years. Labour wastage cannot be made good; it is a great hindrance to production, for it often takes many months before the unskilled new entrant to industry becomes relatively useful as a producer. If, therefore, women can be kept at work for a longer time in the factories without in any way injuring their health, the value to industry must be great; but the fact that working women must undertake

* Factories, Machinery and Building Work Act of 1941 for the Union of South Africa; Chap. III, Par. 23, subsections (1) and (2):

"(1) No female shall work in a factory and no employer or occupier shall require or permit any female to work in his factory during the period commencing 4 weeks prior to the expected date of her confinement and ending 8 weeks after the date of her confinement. Provided that, if the child be stillborn, or dies before the expiration of 8 weeks after birth, the provisions of this subsection shall cease to apply as from a date fixed by an inspector.

(2) The Minister may from public moneys pay to any female who, in circumstances to be determined by him, has discontinued her work in a factory as a result of pregnancy, an allowance equivalent to her ordinary weekly remuneration, but not exceeding 25s. per week, for a period not exceeding 12 weeks, which allowance may be paid in a lump sum or in such instalments as the Minister may determine: Provided that payment of such allowance may be made in respect of an additional period not exceeding 4 weeks if such female discontinued her work in a factory as a result of pregnancy more than 4 weeks prior to the expected date of her confinement."

manifold household duties, etc., after their day at the factory must also be taken into consideration.

We are not in a position to refer to the employment of pregnant women except in the special factories in which we have worked. We feel that co-ordination between employers of labour, trade unions, and Ministries should now be forthcoming, so that a general scheme for rationalizing the position of pregnant women in industry may be worked out for the whole country.

Analysis of Cases

TABLE I

No. of patients, 90 (68 primiparae, 22 multiparae):

Group 1 (under 20 years)	..	10	
„ 2 (21–25 years)	..	36 (31 primiparae;	5 multiparae)
„ 3 (26–30 years)	..	27 (20 „	7 „)
„ 4 (31–40 years)	..	15 (6 „	9 „)
„ 5 (over 40 years)	..	2 (– „	2 „)

TABLE II.—*Periods of Pregnancy at which the Women ceased Factory Work*

Weeks of Pregnancy	Group 1		Group 2		Group 3		Group 4		Group 5		Totals
	M.	P.	M.	P.	M.	P.	M.	P.	M.	P.	
18		1		3		1					5
20			1	3		2		1	1		8
22						1					1
24				2		4	1				7
26				7	1		2	4	1		15
28		3	1	8	3	6	3				24
30			1	2	1	2	1				7
32		1		3		3					7
34		2	1	2	1	1	1	1			9
36		3	1	1	1		1				7
Totals	10		36		27		15		2		90

Of the series of 90 cases, 77 confinements were normal, 80 had normal pregnancies, and 87 had an uneventful puerperium. There were 7 cases of toxaemia (including 2 cases of primary hypertension), 2 cases of puerperal pyrexia, 1 case of severe anaemia (below 50%), 9 cases with haemoglobin between 50 and 60%, 38 with haemoglobin between 60 and 75%, and 42 with haemoglobin above 75%. Abnormal labours comprised 1 Caesarean section and 4 forceps; premature labour—2 premature (1 stillbirth of 3 lb.) and 2 breeches. Breast-feeding was established in 77 cases out of a total of 90.

Conclusions

Ante-natal clinics in factories where pregnant women are employed are very advisable under present conditions.

Where insufficient numbers in any one factory render this impossible, clinics to cover groups of factories in an area might be established.

Under medical supervision many women can do suitable work to an advanced stage of pregnancy.

Nursing mothers should not recommence work (particularly if the baby is breast-fed) for at least three months after delivery.

Day nurseries must be established if a return to work becomes necessary.

A national scheme should be set up to supervise employment of pregnant women and investigate the possibility of increased financial benefits.

We wish to express our gratitude to Sister W. M. Brown, who did much of the original work in establishing the clinic and making the arrangements with local authorities and the hospitals concerned. We must also express our thanks to the City of London Maternity, St. Mary's Islington (L.C.C.), the Royal Free, the Royal Northern, and other hospitals, and also to the municipal midwives who have co-operated so whole-heartedly in the scheme.

M. H. Shulman (*New Engl. J. Med.*, 1942, **226**, 260), impressed with the results in epilepsy of sodium diphenyl hydantoinate, and because of recent work on the psychogenic aspect of bronchial asthma, has tried the drug on six or seven patients suffering from severe asthmatic attacks. The proprietary preparation, dilantin sodium, gave pronounced relief in his small patients aged between 5 and 14 years. He observes that the drug must be given continuously to prevent attacks. In some of these patients the personality was improved.

FIVE CASES OF JAUNDICE FOLLOWING TRANSFUSION OF WHOLE BLOOD OR HUMAN PLASMA

BY

R. E. STEINER, M.B.

(From an E.M.S. Hospital)

In the last few months 5 cases of jaundice have been observed in this hospital. It was found that these patients had all received transfusions and some time later developed the disease. A similar occurrence has been recorded previously by other writers: Morgan and Williamson (1943) reported 9 cases of jaundice following the administration of human blood products, and Beeson (1943) recorded 7 cases of delayed jaundice in subjects who had received blood or plasma transfusions. It seemed, therefore, to be of importance to report the present cases.

Our patients were battle casualties from North Africa, and had been admitted to this hospital from two to three months after having been wounded; they then developed jaundice. All of them had had transfusions of whole blood, human plasma, or both, in varying quantities. The treatment in every case was primarily some form of surgical intervention plus chemotherapeutic measures such as antitetanic and anti-gas-gangrene serum and massive doses of the sulphonamide group of drugs.

Case I

Male aged 23; sustained multiple shrapnel wounds of both legs on April 7, 1943. A transfusion of 500 c.cm. of whole blood, followed by 2.500 c.cm. of plasma, was given on the same day. Jaundice was noticed for the first time three months after injury, the patient having had very slight prodromal symptoms of nausea and headache for some days. Thereafter he felt perfectly well. The jaundice deepened considerably during the first three days, was then stationary for one week, and disappeared in the next two weeks.

Physical examination showed slight tenderness on deep pressure over the right subcostal region for a week after the onset of jaundice; the liver and spleen were never palpable, and the temperature and pulse remained normal throughout the illness.

Laboratory Findings.—Blood count: Normal during the course of the illness, except for a mononucleosis of 8%. Urine: There was never bile in the urine, but excessive urobilin was present. Faeces: Stercobilin diminished. Van den Bergh: Direct positive reaction; quantitative indirect, 2 mg. per 100 c.cm.

Case II

Male aged 28; wounded by a machine-gun bullet in the left thigh on April 11, 1943. A plasma transfusion of 3,000 c.cm. was given on the same day. Three months afterwards he developed loss of appetite and headache, which were followed by jaundice two weeks later. The jaundice deepened steadily over the first week, then became stationary for two weeks; after four weeks only a very faint trace was noticeable. The appetite returned about one week after the onset.

Physical examination after the appearance of jaundice revealed a just palpable liver, which was not tender. The spleen was never palpable. The temperature was slightly raised for the first week of the illness; the pulse remained normal.

Laboratory Findings.—Blood count: Normal during the illness. Urine: Slight trace of bile, large amount of urobilin for four weeks. Faeces: Very much diminished stercobilin for 17 days. Van den Bergh: Prompt positive direct after the first week; quantitative indirect, 4.2 mg. per 100 c.cm.

Case III

Male aged 21; sustained multiple shrapnel wounds on May 9, 1943. A transfusion of 1,000 c.cm. of whole blood was given on the same day. Jaundice was first noticed three months after the wounding. The patient had no symptoms or

signs up to the second day after the onset, when he developed nausea, anorexia, slight abdominal pain, and vomiting. The jaundice deepened during the first week; it remained stationary for some days, and then began to fade until only a faint trace was observed eight days later.

Physical examination revealed a palpable liver one week after the onset of jaundice, and there was slight tenderness on deep pressure in the right subcostal region. The patient was slightly febrile for the first 10 days of the illness, the pulse rate was slow, and the blood pressure slightly below normal.

Laboratory Findings.—Blood count: During the first week normal apart from a mononucleosis of 10% and slight irregularity of red cells. Urine: From the first day of the disease there was excessive urobilin; this gradually diminished, until there was only a trace three weeks after the onset. Faeces: No bile pigments; full of fatty acids for the first week.

Case IV

Male aged 36; wounded by shrapnel and machine-gun bullets in the right arm and both legs on March 18, 1943. He received five transfusions between March 21 and April 14—in all, 3,500 c.cm. of whole blood and 250 c.cm. of plasma. Jaundice was first noticed four months after the injury. Two days previously he had had a slight chill and a moderate elevation of temperature, accompanied by generalized aching pains. Then followed a severe illness of two weeks' duration characterized by general malaise, headache, slight abdominal discomfort, anorexia, frequent vomiting, and drowsiness. The jaundice deepened considerably during the first week, then remained unchanged for two weeks, and after another 10 days only a faint trace was recognizable.

Physical examination during the first week of the illness revealed a slightly enlarged liver with moderate tenderness in the right subcostal region. The spleen was never palpable. After the second week the liver was no longer palpable. The pulse was very rapid—120–130 before the onset of the jaundice; it then settled down to 80–100.

Laboratory Findings.—Blood count: Normal during the first two weeks of the illness apart from a mononucleosis varying from 3 to 16%; moderate anisocytosis and poikilocytosis. Urine: No bile; excess of urobilin. Faeces: Diminution of stercobilin. Van den Bergh: Prompt direct positive; quantitative indirect, 8 mg. per 100 c.cm.

Case V

Male aged 24; received multiple shrapnel wounds in the left leg and chest on March 17, 1943. Transfusion of 500 c.cm. of whole blood was given on March 22. Jaundice was noticed for the first time two months after the wounding. There had been slight abdominal pain and anorexia for two weeks before the onset. He suddenly became very ill on the appearance of the jaundice, which deepened on the second day, and he complained of severe abdominal pain mainly in the subcostal region, incessant vomiting, and headache. At first he was very restless; then gradually he became drowsy and comatose, and died two days after the onset of jaundice.

Physical examination during the last two days of the patient's illness revealed that the liver and spleen were not palpable. The temperature was slightly elevated, the pulse rapid, and the blood pressure normal at first, gradually becoming very low.

Laboratory Findings.—Blood count: The blood picture was normal; there was a slight leucocytosis, with toxic granulations of polymorphs. Urine: Faint trace of bile and bilirubin. Faeces: Slightly diminished stercobilin. Van den Bergh: Slightly delayed positive direct; quantitative indirect, 1.8 mg. per 100 c.cm.

Post-mortem Findings.—There was generalized jaundice, with haemorrhages into the serous membranes. Other findings of significance were:—*Liver:* 32 oz. It had a soft yellow mottled surface, and on section showed irregular yellow patches on a dark red background. Microscopical examination revealed complete destruction of liver cells. The only normal-staining elements were the bile ducts, which were loaded with pigment. Some of the liver cells were greatly swollen and pigmented; the others were reduced to a small necrotic mass and were separated from one another. The capsule was wrinkled. *Spleen:* 7½ oz.; moderately enlarged; diffluent and dark red. Histological examination showed the sinuses to be congested. There was widespread blood pigment, both free and in macrophages. *Kidneys:* Together 12 oz.; flabby; cortex dull, opaque, and swollen, stained dull faint yellow. Microscopically a great degree of swelling of convoluted tubules was seen.

Table showing Details of Cases

Case	Age	Date of Transf.	Amount of Transf. (c.cm.)		Onset of Symptoms	Interval in Days	Date of Recovery
			Blood	Plasma			
I	23	7/4/43	500	2,500	3/7/43	87	26/7/43
II	28	11/4/43		3,000	18/7/43	98	16/8/43
III	21	9/5/43	1,000		31/8/43	114	23/9/43 Still faint trace of jaundice
IV	36	21/3/43	500		10/7/43	111	3/8/43
		23/3/43	500				
		24/3/43	500	250			
		29/3/43	1,200				
		14/4/43	850				
V	24	22/3/43	500		27/5/43	66	(Died 29/5/43)

Discussion

The clinical picture in the five cases described resembled in many ways catarrhal jaundice or infective hepatitis. Generally speaking, it was a slightly febrile illness, with symptoms of nausea, anorexia, slight abdominal discomfort, vomiting, and signs of jaundice, liver enlargement, and tenderness in the right subcostal region. There were, however, some factors which are not usually seen in catarrhal jaundice. In three of the cases there was a definite lack of free bile in the urine, with an excessive amount of urobilin present. In some of the cases—e.g., I, III, IV—there was a marked mononucleosis.

The aetiology of the illness described in these five cases is unknown, and it is impossible, in view of the lack of information about the incidence of jaundice among the untransfused troops in North Africa, to assess the statistical certainty of a connexion between the transfusion and the illness. Nevertheless, the fact that of 245 cases from North Africa, of which approximately 45% had transfusions, 5 developed jaundice while not one of the untransfused cases developed it suggests a connexion between the two. Outbreaks of an illness resembling catarrhal jaundice following inoculation of groups of people with human plasma, serum, or lymph have previously been recorded.

Some aetiological significance must be attributed to (1) the temporal coincidence of the transfusions—within three weeks in four cases—as shown in the accompanying table; and (2) the fact that jaundice has been observed only in our casualties from North Africa and not in those from other theatres of war. It would therefore appear that, while the transfusion may be the cause of the jaundice, certain special circumstances must be attendant on the transfusion before jaundice is produced.

Summary

Five cases of jaundice developing two to three months after transfusion have been reported. It is suggested that the transfusion is the cause of the illness. The limited incidence of this complication has been pointed out.

I would like to thank Mr. C. H. Cullen, who is in charge of these cases, and also Drs. J. Doupe and Mary Sharpe, for their help and criticisms.

REFERENCES

Beeson, P. B. (1943). *J. Amer. med. Ass.*, **121**, 1332.
Morgan, H. V., and Williamson, D. A. J. (1943). *British Medical Journal*, **1**, 750.

J. B. Hartzell and W. L. Stone (*Surg. Gynec. Obstet.*, 1942, **75**, 1), in an experimental investigation into wound healing, found that this was retarded in guinea-pigs kept on a subscurvy diet. In animals operated upon while in a subscurvy state, and given high doses of vitamin C, the wounds reached the same degree of tensile strength as in normal animals by the eighth post-operative day. Histological studies showed that the low tensile strength of wounds in vitamin-C-deficient animals was due to a failure of production of collagen.

HISTOLOGICAL EFFECTS OF SULPHONAMIDE-PROFLAVINE MIXTURES IN THE RABBIT

SOME EXPERIMENTAL OBSERVATIONS

BY

DOROTHY S. RUSSELL, M.D., Sc.D., M.R.C.P.

AND

DIANA J. K. BECK, F.R.C.S.

(Working for the Medical Research Council)

Nuffield Department of Surgery, Oxford

The widespread use of sulphonamide powders in the treatment of wounds has prompted the idea that other substances—notably the acridine antiseptics—might be applied in a similar manner. Thus Mitchell and Buttle (1942, 1943) have claimed beneficial effects from the use of proflavine and diflavine in war wounds. Experiments have shown, however, that acridine powders have a highly destructive effect upon the tissues (Russell and Falconer, 1943; Hawking, 1943). The use of these powders in undiluted form in the treatment of fresh wounds therefore seems undesirable, though they are not of necessity contraindicated for secondarily infected wounds which have failed to respond to other therapeutic measures.

A substantial dilution of proflavine with one of the sulphonamides might be considered a suitable mixture for the prophylactic treatment of wounds, and a blend of one part of proflavine powder in 100 or 200 parts of sulphathiazole has been suggested by McIntosh and Selbie (1943), who find that proflavine is more potent than the sulphonamides in infections with some of the gas-gangrene organisms. Sulphathiazole powder has been found by Glynn (1942) to have a negligible damaging effect upon the tissues in experimental wounds, and in this respect is preferable to either sulphanilamide or sulphapyridine.

The present experiments demonstrate in rabbits the effects of proflavine–sulphonamide mixtures upon (*a*) muscle and subcutaneous tissues, and (*b*) the brain.

Muscle and Subcutaneous Tissues

In this group the powder tested was composed of 1 part of proflavine sulphate and 99 parts of sulphathiazole. The experiments were similar to those described by Glynn. Under ether anaesthesia an incision 1 to 2 cm. long was made in the depilated skin of the thigh, and a pocket (about 2.5 cm. diameter), made between the panniculus carnosus and the skeletal muscle by introducing and opening the blades of blunt scissors, was filled with about 0.25 g. of the powder. The wound was then closed. The disk of blood-clot also inserted by Glynn was omitted. Six rabbits were treated in this way, sulphathiazole alone being introduced into the left leg, and the mixed powder into the right. The animals were killed after 1, 2, 4, 8, 10, and 16 days respectively.

Macroscopical Changes

The site of operation in general appeared swollen and felt boggy for the first few days after operation. In four of the animals the right side was considerably more swollen than the left, and in one of these slight oozing of clear yellowish fluid was observed on the third day at the point where a stitch had been lost. From the fourth day onwards this wound was dry and the inflammation subsided. In the remaining two animals the left leg showed the greater swelling. All wounds appeared to heal in a normal manner with the single exception mentioned.

When the block of tissue including the operation area had been excised, fixed in formaldehyde, and sliced, the powder was identified as a lenticular, cheesy mass about 2 cm. in diameter and 0.3 or 0.4 cm. thick, which decreased with time and was reduced to a linear streak by the eighth day. With *pure sulphathiazole* the changes in the surrounding tissues were limited to slight oedema on the first day, with traces of haemorrhage in the adjacent fasciae and deep aspect of the skin. With the *mixed powder* there was on the first day severe oedema with diffuse haemolytic staining of the deep aspect of the skin, extending from the site of operation to the base of the tail and involving the fascia covering the skeletal muscle for a distance of 1 cm. from the pocket. On subsequent days the staining of the fascia was replaced by petechial haemorrhages, which similarly extended for distances up to 4 cm. from the site of operation. There was a zone of discoloration up to 2 mm. deep in the skeletal muscle, varying from yellow on the first day to brownish pink or yellowish grey in later stages. Oedema of the adjacent tissues, and particularly of the skin, persisted up to the sixteenth day over the pocket, which was replaced after the eighth day by a lenticular mass of gelatinous greyish-yellow material.

Microscopical Changes

1. *With sulphathiazole alone* oedema of the dermis, panniculus carnosus, and the deep fascia was conspicuous at first, but had almost disappeared by the fourth day. Most of the powder had been absorbed by the fourth day, but a few crystals were found on the tenth. The site of the powder beneath the panniculus carnosus was identified by a capsule of closely felted filaments of fibrin, which became increasingly folded as the space collapsed. By the fourth day this capsule was sparsely infiltrated by polymorphonuclear leucocytes and large mononuclear cells, and immediately about it lay a thin zone of proliferating fibroblasts. By the eighth day the capsule was broken at many points by the ingrowth of granulation tissue, which lined most of the enclosed space (Fig. 1). The

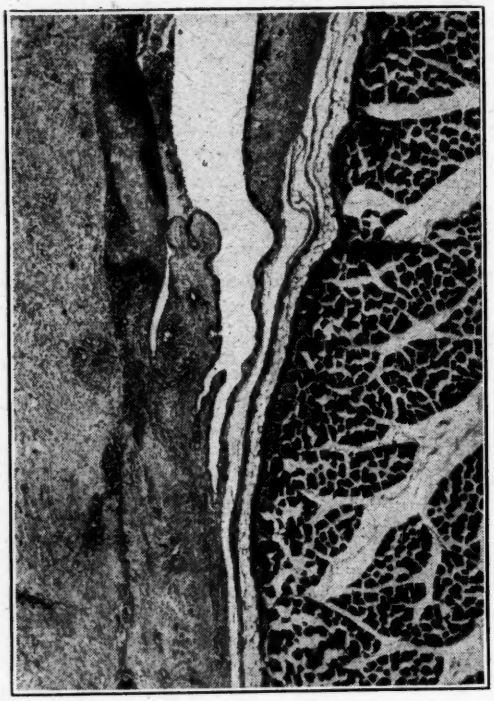


FIG. 1.—Border of skeletal muscle and lateral angle of pocket 8 days after insertion of sulphathiazole powder. The borders of the pocket are replaced by granulation tissue. H. and E. × 21.

appearances were similar on the tenth day, but by the sixteenth day all traces of the cavity had been obliterated by collagenous tissue. The panniculus carnosus immediately over the pocket was involved by the formation of granulation tissue, but the muscle fibres, though separated, did not undergo degeneration or necrosis. The subjacent skeletal muscle of the thigh showed slight oedema in early stages but underwent no degeneration in any instance.

2. *With sulphathiazole-proflavine mixture* the histological changes differed from those which followed the introduction of sulphathiazole alone, first, in the persistence of local oedema up to the sixteenth day; secondly, in the conspicuous development of haemorrhagic necrosis in the dermis, the panniculus carnosus, the subjacent skeletal muscle and its fascia (Fig. 2); and, thirdly, in the consequent retardation of healing in these layers although the skin incision healed as rapidly as in the controls. Thus the panniculus carnosus was completely necrotic throughout the length of the section (2.5 cm.) in the animal killed after one day, and the necrosis extended laterally for a similar distance in the subjacent fascia, which was greatly swollen. Yet the zone of necrosis in the skeletal muscle was no deeper than about 1 mm., and in two of the animals was limited to the most superficial fibres. The extent of necrosis about the pocket of powder resulted in a retardation of healing. Thus granulation tissue did not appear until the eighth day; it then occupied the deep border of the subjacent necrosed skeletal muscle and the surface of the deep fascia over it lateral to the pocket, while tongues of young fibroblasts penetrated through the subcutaneous tissue to within 2 mm. of the fibrin capsule about the pocket. Even by the sixteenth day the fibrin capsule persisted at many points, especially along the superficial border towards the dermis.

COMMENT

The histological effects of sulphathiazole powder alone are thus negligible, confirming the observations already made by Glynn. A mixture of proflavine sulphate and sulphathiazole (1:100) is substantially damaging to muscle and connective tissue: necrosis and haemorrhage are widely distributed along fascial planes and in loose connective tissue, but the penetration of solid masses of muscle appears very limited.

Since these observations were made some parallel experiments on rats have been reported by Selbie and McIntosh (1943). They inserted about 10 mg. of similar powders beneath the panniculus carnosus of the abdominal wall on either side of the mid-line. The area exposed to the powders was of similar dimensions to that in our experiments. The histological results in these rats appear to have resembled those obtained by us in the rabbit except in two particulars. First, the

FIG. 2.—Same animal as in Fig. 1, showing necrosis of skeletal muscle and fascia over it 8 days after insertion of proflavine–sulphathiazole mixture. H. and E. × 21.

panniculus carnosus in the rat underwent the same degree of necrosis following exposure to both kinds of powder. Secondly, no retardation of healing was observed in the rat in comparison with the areas treated by sulphathiazole alone, in spite of the apparently greater damage inflicted by the proflavine mixture. To some extent these divergences might be attributable to the use of different animals and different sites. But more important, probably, is the difference in the severity of the test. Thus in the experiments of Selbie and McIntosh a much smaller quantity of the powder was dispersed in a thin film between the muscle layers, while we, following Glynn, inserted enough powder to form a lenticular mass several millimetres thick. The observed difference in the two series is a warning against the use of excess of the proflavine–sulphathiazole mixture.

Central Nervous System

Sulphapyridine was substituted for sulphathiazole in these experiments on account of the known epileptogenic effects of the latter. In a few animals sulphadiazine was used. Craniotomy was performed on 28 rabbits, the technique being the same as in earlier experiments (Russell and Falconer, 1943). Details are given in the Table.

The animals were killed at either 2 or 4 days after the operation. During this period weakness of the right limbs and excitability were noticed in both animals in Group 1, and to a less marked extent in a variable number of animals in all the other groups.

Pathological examination showed a lack of uniformity in the reaction of the meninges and brain in the exposed area. In Groups 1 to 3 inclusive a proportion of the animals, as shown in the Table, exhibited a haemorrhagic necrosis that

Group	Mixture Used		No. of Animals	Severe Reaction
1 ..	Proflavine sulphate - sulphapyridine,	1 : 25 ..	2	1
2 ..	,, ,, ,,	1 : 50 ..	7	3
3 ..	,, ,, ,,	1 : 100 ..	9	3
4 ..	,, ,, ,,	1 : 200 ..	7	0
5 ..	,, ,, - sulphadiazine,	1 : 200 ..	3	1

extended down to the wall of the lateral ventricle. In the rest the reaction was limited to focal meningeal haemorrhage and oedema of the cortex, accompanied by severe degeneration, with or without necrosis, of a superficial zone not exceeding 1 mm. in depth. In Group 4 this zone did not exceed 0.5 mm. in depth, and the reactions in this group were thus of a more consistent character though somewhat variable.

No satisfactory explanation of these uneven results can be offered. Examination of the powder under low powers of the microscope suggested that uneven distribution of the proflavine particles might be responsible, but regrinding the mixture in an agate mortar, and trials of specially prepared samples kindly provided by Messrs. May and Baker Ltd., made no obvious difference to the results. Nor did accidental trauma to the brain during the operation appear to be a factor. Thus superficial trauma, due to a bleeding vessel or to a small abrasion, was noted in five of the animals. In two of these the ultimate damage to the brain was found to be severe: in the other three it was slight. Small variations in the amount of powder used might be regarded as a possible cause, but in one of the animals in Group 3 an excess of powder was deliberately applied, and in this animal the damage was limited to marginal oedema, haemorrhage, and necrosis, together less than 1 mm. deep. We are thus left with the unsatisfactory suggestion that variations in the results are due to factors inherent in the individual. It is nevertheless clear, as indicated in the Table, that the incidence of a severe reaction falls with a diminishing proportion of the proflavine used in the mixture.

Conclusions

The first group of experiments here reported confirms previous observations that the insertion of substantial amounts of sulphathiazole powder into clean incised wounds is harmless to the tissues. Similar amounts of a powder consisting of 1 part of proflavine sulphate to 100 parts of sulphathiazole caused considerable damage to the neighbouring muscle and connective tissues, though the penetration of the proflavine into solid masses of muscle appeared to be slight and rather uneven.

The experiments on the rabbit's brain with mixtures of proflavine and sulphapyridine powders indicate a similar damaging effect of the proflavine, though the results in this group are not so clear-cut. Mixtures containing only 0.5% of proflavine sulphate are appreciably less damaging than those with higher percentages of this compound. Comparison with earlier experiments shows that both proflavine solutions (1 : 1000) and sulphonamide powders are preferable from the standpoint of histological effect.

It is a pleasure to thank Prof. J. A. Gunn for providing accommodation for the animals. Our expenses were defrayed by a special grant from the Medical Research Council, and the work was carried out on behalf of the Council's War Wounds Committee.

REFERENCES

Glynn, L. E. (1942). *J. Path. Bact.*, **53**, 183.
Hawking, F. (1943). *Lancet*, **1**, 710.
McIntosh, J., and Selbie, F. R. (1943). Ibid., **1**, 793.
Mitchell, G. A. G., and Buttle, G. A. H. (1942). Ibid., **2**, 416.
—— —— (1943). Ibid., **2**, 287.
Russell, D. S., and Falconer, M. A. (1943). Ibid., **1**, 580.
Selbie, F. R., and McIntosh, J. (1943). *J. Path. Bact.*, **55**, 477.

The National Institute for the Blind in its 74th annual report records a year of remarkable activity among the hundreds of sightless physiotherapists trained at the Institute's School of Massage and now engaged in the work professionally. At the clinics attached to the London headquarters there have never been so many patients in attendance or so many treatments given. The numbers at the evening clinic were respectively 7,610 and 14,117 as compared with 5,185 and 9,859 in the previous year; and at the Eichholz Clinic, which is now recognized as a fracture clinic by the Ministry of Health, they were 4,800 and 11,616, as against 2,972 and 7,657.

VACCINATION AGAINST TYPHUS FEVER

BY

JOHN B. PENFOLD, M.B., B.S.

Emergency Pathological Service Laboratory, St. Andrew's Hospital, Billericay, Essex

The incidence of agglutinins for *Proteus* OX 19, OX 2, and OXK in the British population has rarely been investigated. It was reported in the Monthly Bulletin of the Emergency Public Health Laboratory Service (Aug., 1942, p. 6) that in 100 "normal" sera no agglutination was obtained with any of the three suspensions above 1/128 dilution. The titres for OXK were approximately double those found for OX 19 and OX 2, and it was suggested that titres of 1/80 or over with OX 19 are unlikely "in the absence of exposure, either recent or remote, to typhus infection." Approximately nine-tenths of these sera showed a titre of 1/16 or less with the OX 19 and OX 2 suspensions.

There is only one report from this country on vaccination against typhus fever and its effects on the Weil-Felix reaction. Felix (1942), in a report to the Medical Research Council, gave briefly the alterations in the OX 19 agglutinin titre evoked by various vaccines. Considering 100% or greater increase in agglutinin titre as significant, very variable results were found with both the type and the batch of vaccine used. With vaccines of the Cox type the proportion showing a significant rise in titre varied with the batch of vaccine from approximately 5 to 50%.

The Present Investigation

In the investigation now reported a vaccine prepared by the Connaught Laboratories, Toronto, from a European louse-borne strain of *Rickettsia prowazeki* grown in the yolk-sac of chick embryos (Cox, 1938) was used. It was issued on Nov. 4, 1941, and with a batch of vaccine of the same date Felix obtained a significant increase in OX 19 agglutinin titre in about half of those inoculated. Twenty-three public health workers were vaccinated and their Weil-Felix and clinical reactions were investigated. At weekly intervals each received 0.25 c.cm., 0.5 c.cm., and 1 c.cm. of vaccine subcutaneously, and three months later a fourth dose of 1 c.cm. Samples of blood were obtained on four occasions: (1) before the first injection; (2) a fortnight after the third injection; (3) before and (4) a fortnight after revaccination; these were tested for OX 19, OX 2, and OXK agglutinins. The method used in the Weil-Felix test was as follows:

Concentrated suspensions of OX 19, OX 2, and OXK, prepared at the Standards (M.R.C.) Laboratory, Oxford, were diluted 15 times and added in equal quantity to serial serum dilutions, the final dilutions of serum being 1/5, 1/10, 1/20, 1/40, 1/80, 1/160, 1/320, and 1/640, while that of the suspension was 1/30. All tubes were incubated at 56° C. for 4 hours, and the test was read after standing at room temperature overnight; the last tube showing standard agglutination was taken as the titre.

Before vaccination the titres for OX 19 and OX 2 in the 23 cases were all 1/20 or less, the majority showing no agglutination at 1/5. With OXK, 20 out of the 23 showed titres ranging from 1/20 to 1/160, the commonest being 1/40. No higher titre was observed.

Relation of Agglutinin Titres at Various Stages to the Number of Cases

Suspensions	Titre	Before Vaccination	Number of Cases: 2 Weeks After Vaccination	3 Months After Vaccination	2 Weeks After Revaccination
OX 19	0 to 1/10 ..	20	10	15	4
	1/20 to 1/160	3	13	8	19
OX 2	0 to 1/10 ..	22	13	21	11
	1/20 to 1/80	1	10	2	12
OXK	0 to 1/40 ..	15	1	21	18
	1/80 to 1/640	8	22	2	5

Vaccination in the majority of cases resulted in an increase in titre of the three agglutinins. Three months later they had decreased, but not to the pre-inoculation level. After revaccination the OX 19 and OX 2 agglutinin titres rose again, the former above and the latter to the level recorded after primary vaccination, while the OXK titres were not appreciably altered. These results are tabulated below by correlating the number of cases with the agglutinin titres of their sera.

Even after revaccination the highest OX 19 agglutinin titre was 1/160 (1 case), and OX 2 was 1/80. If more than 100% increase in OX 19 agglutinin titre is taken as significant, 14 cases out of 23 (61%) showed it after primary vaccination and 17 (74%) after revaccination.

Reactions to the injections were as a rule quite slight, and diminished in severity with each additional injection. General reactions, such as occasional malaise, headache, drowsiness, and muscular pains, were less frequent than local reactions, which presented as areas of erythema, swelling, and stiffness, usually starting 12 to 24 hours after the injections and lasting a day or two.

Summary

Twenty-three people were vaccinated with a Cox vaccine against typhus fever and revaccinated three months later.

The Weil-Felix reactions on these individuals showed low normal agglutinin titres, which were increased after vaccination, and, in the case of OX 19, after revaccination.

The reactions to the vaccine were slight.

I wish to thank the Medical Research Council for the supply of vaccine and Prof. S. P. Bedson for his helpful advice.

REFERENCES

Cox, H. R. (1938). *Publ. Hlth. Rep.*, Wash., **53**, 2241.
Felix, A. (1942). *British Medical Journal*, **2**, 597.

TREATMENT OF PEDICULOSIS CAPITIS

BY

ERIC BLACKSTOCK, M.D., B.Sc., D.P.H.

Venereal Diseases Officer, Birkenhead County Borough

Coincident infestation of the skin by *Sarcoptes scabiei* and of the scalp by *Pediculus humanus capitis* has become more common among patients attending the scabies clinic in Birkenhead. From the table given below one can see the steep rise in lousiness recorded in school-children during routine cleanliness inspection; it also gives a fair indication of the increase in lousiness of many families in the borough. It is not an uncommon sight to find children's scalps in an unbelievably filthy condition, with lice present in thousands.

Results of Cleanliness Inspections carried out by the Health Nurses in the Elementary Schools, 1938–43

Year	No. on School Rolls	No. with Nits	No. with Vermin	Total No. Unclean
1938	20,101	2,499	253	2,808 (13·9 %)
1939	19,519	2,781	89	2,959 (15·16%)
1940	14,989	1,857	146	2,086 (13·92%)
1941	11,753	1,863	107	2,141 (18·22%)
1942	14,398	2,412	115	2,871 (19·94%)
1943 (Jan.–June 30)	14,999	2,420	388	3,026 (20·17%)

These figures refer to the number on the rolls of the elementary schools at the end of the December term of each year, except in the case of 1939, the figures for which refer to the number on the rolls at the end of the summer term; all schools were closed in the following September owing to the outbreak of war.

Since the publication by J. R. Busvine and P. A. Buxton (*B.M.J.*, 1942, **1**, 464) of their use of lethane oil as a means of controlling head lice, I have employed it at the scabies clinic with excellent results so far as the killing of lice is concerned, but it leaves much to be desired regarding its effect on nits cemented to the hair. It is unfortunate that scabies seldom, if ever, affects the scalp, except perhaps at the nape of the neck, otherwise it would not have been left to me to draw attention to the clinical finding that an emulsion of benzyl benzoate is the treatment *par excellence* for pediculosis capitis even when complicated by impetigo, etc. Its solvent action on the cement of the nit and its lethal action on the louse make it a very quick and effective remedy in "delousing."

One must emphasize that it is necessary to use a non-irritating formula of benzyl benzoate emulsion, as the majority

of the emulsions tried first at the clinic were too painful for the patient. However, the latest formula of ascabiol can safely be used twice daily for three or four days, though I have seldom found it necessary to treat for more than three days. This is a most important matter, as unsuitable emulsifying agents in the benzyl benzoate preparation will soon cause sore scalps and poor results. The action on the nit is a "combined operation," because, used alone, neither benzyl benzoate nor the emulsifying agent gives the desired result; nor does their use as separate solutions applied one after the other on the same or different days.

Method

All the experiments carried out were designed to remove the nits from the hair without the usual tedious work of combing. At first hairs were removed and put into sealed tubes to act as a control for the viability of the nit. This practice was discontinued when it was realized that the object of the experiment was not to determine whether the nit was dead or alive but to discover an easy method of freeing the scalp from nits about whose viability one could never be sure. The results were briefly as follows, after applying the four undermentioned solutions:

Solutions used	*Effect on Nits attached to Hairs 24 Hours Later*
1. 25% benzyl benzoate dissolved in industrial spirit	Nits still remain adherent to hairs
2. Emulsifying agent (triethanolamine stearate)	No apparent effect on nits
3. Ascabiol (new formula) ..	Nits loosened; removed by simple wash with soap and water
4. Lethane oil	Nits appear more strongly attached to hairs than before

The effect of ascabiol emulsion is superior to that of lethane oil, as the lice appear to be dissolved in the solution.

The severe cases of infestation with *Pediculus capitis* in which coccal infection had occurred with much crusting of scalp and enlargement of the post-cervical glands were treated daily with the ascabiol. Most of the scalps were clean and healed in less than a week. I do not know of any other form of treatment which gives such quick results, despite the trial in hospital of numerous preparations over a period of many years, with both in-patients and out-patients.

For those wishing to carry out this method of treatment—which is now my routine for all scalps infested with (1) nits only, (2) lice and nits, (3) lice, nits, impetigo, etc.—I have given the technique used at the scabies clinic, where these experiments were carried out by myself and the nursing staff. This method has relieved the staff from the tedium of fine combing: simple washing with soap and water was sufficient to remove all remaining nits.

Routine Treatment now used

First day: Head coated with ascabiol (new formula); application made with painter's brush 1½ in. or 2 in. wide.

Second day: Hair washed with soap and water.

One week later: Head inspected carefully for possible reinfection.

If the infestation is a very heavy one this treatment is given twice in 24 hours. If there is coincident coccal infection of the scalp the treatment is repeated on the second and third successive days; then one of the common forms of healing ointment is given until the inspection of the scalp one week later. Ointments in use are mostly preparations of sulphonamides in Mumford's base, lanette wax, or vaseline. In cases of seborrhoea, sulphur and salicylate in vaseline are sufficient. As already mentioned, treatment with ointments is seldom necessary.

I wish to thank the medical officer of health, Dr. D. Morley Mathieson, for permission to carry out this work at the scabies clinic; also the nursing staff, whose assistance made the work possible. Messrs. May and Baker kindly supplied the benzyl benzoate emulsion "ascabiol" (new formula) used in these experiments.

L. E. McCrea (*J. Urol.*, 1942, **47**, 818), who records an illustrative case, states that congenital absence of the penis is one of the rarest anomalies on record, only ten previous cases having been reported. It must not be confused with pseudo-hermaphroditism, hidden penis, or epispadias. The present case was that of an otherwise normal young man who wished to marry. During sexual excitement the presence of erectile tissue in a small eminence on the perineum was manifested by some enlargement, and on manipulation an apparent ejaculation of semen took place.

Medical Memoranda

Recovery from Actinomycosis of the Liver

I can find no other report of recovery from actinomycosis of the liver, and therefore consider that this case should be put on record.

In Oct., 1928, a hitherto healthy young man began to complain of abdominal discomfort and anorexia. He wasted very rapidly, and by the end of the year was extremely ill. His conjunctivae turned yellow, and on examination a large epigastric mass was discovered. In Feb., 1929, he was operated on at Swansea and a portion of the tumour was removed for microscopical examination. After the operation the surgeon informed the patient's wife that there was a tumour of the liver "as big as my two fists"; that he thought it was malignant; and that he was afraid her husband had but a short time to live. Two months later the tumour had completely disappeared and the patient seemed perfectly well. Now, 15 years later, at the age of 46, he has just been passed for insurance purposes as a first-class life.

The report on the section was "actinomycosis of the liver." Because of an article of mine which was published in the *B.M.J.* of Feb. 23, 1939 (p. 347), the patient was treated with 5-minim doses of tr. iodi sine iodidi 3 times a day in milk, and in April of that year he was sent by Dr. Taylor of Swansea to see me for my opinion as to whether the treatment should be continued longer. As a precautionary measure I advised him to take one dose daily for a further 6 weeks.

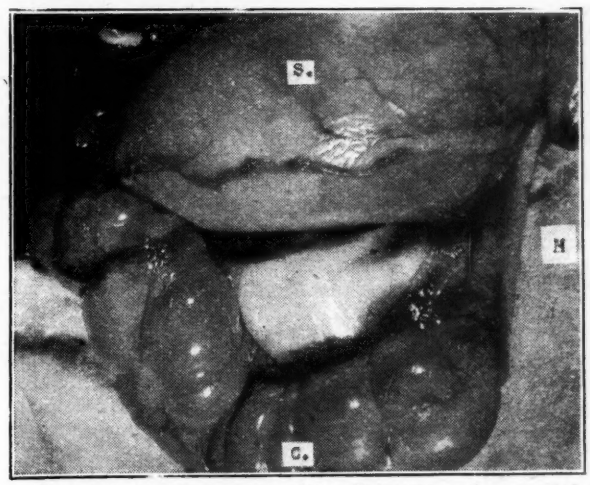
Bristol. HUBERT CHITTY, M.S., F.R.C.S.

A Case of Congenital Microcolon

Cases of microcolon in the literature stress the extreme rarity of the condition. Theremin (1877) recorded two cases in 111,451 necropsies in Vienna. Greig (1925) reviewed the literature of the condition and published three cases in which the entire colon was diminutive, and in which there were, in addition, abnormalities in the small gut. The case here recorded is one in which only part of the colon was affected, and is comparable to two cases reported by Klippel and Feil (1912) and Lesné and Baruk (1923).

CASE HISTORY

The patient was a male first-born infant of 5½ months. Both parents were young and healthy. At the age of 6 weeks the child had a mild skin eruption, which was followed by an attack of acute gastro-enteritis; these responded to treatment. A month later the patient developed acute bronchitis and enteritis, and again recovered. The final illness began with a recurrence of the bronchitis, which progressed to bronchopneumonia with a left-sided empyema. During this last illness the abdomen showed gradual and progressive distension, which was associated with severe constipation. Repeated enemata produced small results in which the faeces were normal in appearance. Rectal examination disclosed no abnormality. A straight radiograph of the abdomen showed gas distension of the small intestine and the caecum.



Photograph showing transverse colon pulled downwards to reveal the transition in size taking place proximal to the splenic flexure. S, Stomach, with omentum removed. C, Transverse colon. M, Microcolon.

POST-MORTEM EXAMINATION

A left-sided empyema was present in association with a small superficial lung abscess; this condition was regarded as the cause of death. The condition of the bowel was of particular interest. The gut was normal in position and fixation. The small intestine was distended, and the distension was more pronounced as the gut was traced distally. The large intestine was distended up to a point

about 1½ inches proximal to the splenic flexure, where the size of the colon became diminutive. The entire descending and pelvic colons were very small. The lumen of the affected segment of gut was quite patent, but was reduced in diameter. There was no evidence of any form of organic obstruction at the junction of the normal colon and microcolon or elsewhere.

It is a feature of particular interest that the segment of colon involved was that deriving its blood supply from the inferior mesenteric artery and corresponding embryologically to the hind-gut.

K. C. McKEOWN, M.Ch., F.R.C.S.Ed.
C. A. HOLMAN, M.B., B.S.

REFERENCES

Greig, D. M. (1925). *Edinb. med. J.*, **32**, 175.
Klippel, M., and Feil, A. (1912). *Bull. Mém. Soc. Anat. Paris*, 6e s., **14**, 144.
Lesné, E., and Baruk, H. (1923). *Presse méd.*, **31**, 1034.
Theremin, E. (1877). *Dtsch. Z. Chir.*, **8**, 34.

Traumatic Rupture of the Superior Vena Cava

The following case is considered unusual enough to justify description of the post-mortem findings in some detail. It is that of a West African soldier, of limited horsemanship, who was riding his officer's polo-pony at a gallop when the pony swerved to one side and the rider struck his chin against a metal pylon. The force threw him from the pony. The man was seen to give a few gasps, and died within two minutes.

FINDINGS AT NECROPSY

External Appearances.—The body of a well-developed African male about 25 years of age, with the head lolling abnormally. Severe bruising and abrasions were seen on the forehead, chin, and left hip, and a few scratches on the front of the left thigh. The nose was battered in, and the mouth contained much road-grit. There was no haemorrhage from either auditory meatus.

Internal Appearances.—Skeletal system:—The cervical spine had fracture-dislocations of C3 and C5, the fractures involving the articular pillars with posterior displacement of the neural arch. The bodies of the vertebrae were intact. *Heart and Mediastinum:*—The pericardium was under tension due to contained blood, and several large bubbles of air were found. About half a pint of liquid blood was present in the pericardial sac. The heart was covered with a slight excess of pericardial fat, and the right ventricle was considerably dilated but empty. There were a few small subendocardial haemorrhages in the left ventricle. All four valves were normal. The coronary arteries were free from atheroma, but small bubbles were visible within their lumina and could be expressed, especially from the anterior descending branch of the left coronary artery. The aorta was normal. The superior vena cava was completely ruptured across just within the pericardial sac, about three-quarters of an inch from its entry into the right auricle. The distal end of the vein was separated from the proximal end by some two inches, the intervening space being filled with blood-clot. The escaped blood had extravasated around the base of the aorta, downwards behind the heart, and upwards as far as the thyroid, to form an irregularly trilobate mass (see Fig.).

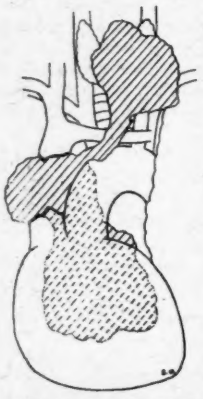


Figure showing extent of extravasation. The interrupted shading represents clot behind the haemopericardium.

Lungs:—The right pleural cavity was partially obliterated by old dense fibrous adhesions. The left pleural cavity was normal, but an irregular-shaped haemorrhage, about 1 in. by 2 in., was present under the parietal pleura underlying the fourth and fifth ribs in the mid-axillary line. There was no fracture of the ribs in this region or elsewhere. The visceral pleurae were both intact. At the antero-superior margin of the left lung a large emphysematous bulla was present, filled with blood and air. Many small bubbles were visible under the pleura on both the mediastinal and the costal surfaces. The lungs were bulky, firm, dark, and crepitate. The lower part of the trachea and the main bronchi were filled with frothy blood. On cutting across the lungs they were seen to be turgid with contained blood.

The only other finding of note was that the left ureter was thickened and congested, and there was a cylindrical swelling 1 in. long situated about 3 in. from the kidney pelvis. This was due to schistosomiasis, a condition not uncommon in the West African. The bladder was normal.

COMMENT

From the injuries to the nose, forehead, and chin, the grit in the mouth, and the double fracture-dislocation of the cervical spine, it is thought likely that a severe degree of hyper-extension of the latter occurred. Presumably this caused considerable tension on the superior mediastinal contents, resulting in rupture of the superior vena cava. Death could not have been instantaneous, as evidenced by the subendocardial haemorrhage, the air bubbles in the coronary arteries, and the blood-distended lungs showing interstitial emphysema.

I am indebted to Brig. R. A. Hepple, D.D.M.S., West African Forces, for permission to publish this case.

S. ORAM, M.D., M.R.C.P.,
Capt., R.A.M.C.; Graded Physician.

Reviews

SKIN GRAFTING OF BURNS

Skin Grafting of Burns. By J. Barrett Brown, M.D., senior consultant in plastic surgery, E.T.O., U.S. Army; associate professor in surgery, Washington University; and Frank McDowell, M.D., assistant in clinical surgery, Washington University. (Pp. 204; illustrated. 30s.) London: J. B. Lippincott Company.

This is an excellent concise statement of the value of skin grafting in the treatment of burns. The authors have drawn from their experience during many years, to which are added observations by one of them (Dr. Barrett Brown) in this country since the war started.

The book is essentially practical, and therefore no attempt is made to sift or discuss the great mass of theoretical and controversial matter that has filled the medical press in recent years. The authors describe the methods they have found most useful and the reasons for their choice. Early treatment comprises adequate cleansing, open surgical drainage (including baths), and pressure dressings. The disadvantages and dangers of coagulants are discussed. Careful histological studies of healing burns, of unhealed ulcers of donor sites, and of healed grafts are included to explain epithelial repair. Split-skin grafts applied early are recommended in all deep burns to obtain primary healing. The exact technique is described, and photographs of grafts as much as 36 in. long are reproduced. The many methods used in late repair are next described. The authors appear to have had most success with split-skin grafts, and many excellent results are illustrated. Flaps and tube pedicles are also used, but these are not described in great detail. There is an interesting chapter on the use and limitations of homografts, and another on the faults of grafts.

This is a book that all should read, if only to learn from the many excellent illustrations the best methods for quick restoration of function in these so often tragic cases.

THE TOO-PROTECTIVE MOTHER

Maternal Overprotection. By David M. Levy, M.D. (Pp. 417. $4.50 or 30s.) New York: Columbia University Press; London: Oxford University Press. 1943.

This book is the product of collaboration by the staff and students at the Institute of Child Guidance of New York. The importance of mother-child relationship in the study of psychiatry is pointed out, and the "broad front" approach of child guidance team-work is contrasted with the "narrow front" approach of psycho-analysis. Both may be useful. From the large volume of child guidance material a number of cases of "obvious" over-protection were selected, and these could be contrasted with other groups investigated by different groups of workers. Five groups of over-protection could be differentiated, but only the first can be considered as "pure." They are: (i) over-protection of a wanted child; (ii) predominance of but inconsistency of over-protection which is mixed with rejection; (iii) over-protection in infancy followed by rejection on the arrival of a second child; (iv) mild maternal over-protection; (v) non-maternal over-protection.

The criteria of maternal over-protection are taken as: (*a*) excessive contact; (*b*) prolongation of infantile care; (*c*) prevention of independent behaviour; (*d*) maternal control. This last criterion may be modified when the mother is "conquered" by the child and becomes submissive to it at home while maintaining her protective attitude towards it in face of the outside world. Excessive contact is considered especially in relation to boys sleeping with their mothers, but incestuous fantasies or activities were not found to be prevalent. Prolongation of infantile care is examined statistically in relation to breast-feeding, which is shown to be prolonged in over-protected children. Prevention of independent behaviour is dealt with in relation to school performance. The over-protected child tends to show superior educational achievement, relatively high scores in language, poor scores in arithmetic (because mothers are not good at arithmetic and because the child is not sent on messages which need arithmetical calculations?), and special interest in reading with a general lack of interest in sports. Other effects of this kind of over-protection are discouragement from forming friendships

and playing with other children, and the reputation of being "sissy" outside the home, although such a child may be very tyrannical in the home.

It was found that many too-protective mothers were over-anxious for children because of long periods of sterility and the like. There is no conclusive evidence that this over-apprehensiveness was compensatory for an unconscious hostility to pregnancy. Sexual maladjustment with the husband was common, as was the factor that the couple had little in common in their social life. Many of the over-protecting mothers had been themselves deprived of satisfactory parental relationships. The mothers who were the subject of this study tended to be aggressive and their husbands to be submissive. There was a distinct tendency in the family histories for grandparental interference.

The behaviour of over-protected children is characterized by disobedience, impudence, tantrums, excessive demands, and varying degrees of tyrannical behaviour. At school they behaved fairly well—perhaps because they were intelligent and their mothers ambitious. In the case of three boys who were troublesome in school both mother and child were of poor intelligence. These children found difficulties in making friends, though camps made this better. No particular sexual disturbances were found. They suffered from feeding difficulties, but not from sleep or secretory troubles. They were well developed physically, and in general well looked after.

Methods of treatment, in addition to remedying physical defect, consisted in psychotherapy of the mother, to get her to realize what she was doing and release the child; of the father, to persuade him to take more interest in and exert more authority over the child; of the child, to show him why he was dependent and tyrannical and to induce him to take a more responsible attitude to life. Environmental therapy consisted in attempts to widen the interests of the mother and to bring her into closer social relationship with her husband, so that the parents could be husband and wife as well as father and mother. The child was provided at least with opportunities for contacts and activities outside the home. The social worker attempted to give practical demonstrations in the home of how the situation should be handled. The main thing was to separate mother and child by some means or other, if necessary by periods of absence from each other. On the whole, treatment showed satisfactory results, but as a rule was difficult and took up much time. A final chapter is devoted to a description of case studies and follow-up; and, in an appendix, detailed summaries are given of twenty cases.

This book is a masterly exposition of a collective research into a limited but important field of personality relationship, which has no small influence on the development of the adult personality, and it can be recommended to all who are attracted by child psychiatry as an interesting study and a valuable book of reference.

NARCO-ANALYSIS

Narco-Analysis. A New Technique in Short-cut Psychotherapy. A Comparison with Other Methods: and Notes on the Barbiturates. By J. Stephen Horsley. Oxford Medical Publications. (Pp. 134. 8s. 6d.) London: Oxford University Press. 1943.

This small book covers the various aspects of the treatment of psychiatric conditions by means of the injection of an intravenous barbiturate to produce a degree of narcosis in which the patient is more communicative than in ordinary circumstances. The technique and its various applications are described.

The special interest of the book lies in its description of the few cases of the melancholic or, more rarely, of the schizophrenic type in which the method has enabled psychotherapy to be applied successfully, though unfortunately the case records are hardly full enough to be satisfactory. Incidentally the claim is implied by the author that he was the first person to use this method in this country. This, indeed, is probably true so far as any "analysis" is concerned, but he was not in a position to know that the first person to use it as a method of treatment in psychogenic disorders in this country was Dr. Broome of Oldham, who employed it with success in hospital practice as a means of conveying therapeutic suggestions in a wide variety of psychiatric conditions. Dr. Broome has, however, forborne to publish his results from an excess of modesty.

This book is a convenient if enthusiastic summary of the field of application of the method, and it is to be hoped that those who have not tried it out may be stimulated to use it in the carefully selected field where it is useful chiefly as a time-saving device. When the exigencies of wartime make it a tempting short-cut, it can easily be abused.

Notes on Books

In these days of crowded life, when the fashion is to concentrate everything from vitamins to air assaults, there may be a growing band of embryo surgeons who relish the idea of concentrated text-books. The day may come when the operator has before him in the theatre a sterile guide to surgical technique even as the conductor has his score of music. The majority still believe that operative surgery is an art which cannot be so practised, neither can it be learned from summaries pinned to the bedroom wall. For those to whom the concise presentation of facts in tabulated form does appeal Dr. MORRIS A. GOLDBERGER's little book *Gynecologic Surgery* will have a special fascination. It contains an amazing amount of information in its 154 pages of summarized text. It is entirely devoid of diagrams, but every third leaf is left blank for the convenience of the reader who wishes to add his own notes or sketches. The subject is covered in 14 sections, which for the most part are arranged on an anatomical basis. An adequate index concludes the little book, which is published in this country at 12s. 6d. by the Oxford University Press.

Dr. I. NEWTON KUGELMASS has written *Clinical Pediatrics* as a member of the outline series published at 12s. 6d. by the Oxford University Press. It is entirely in the form of a synopsis, with headings and subheadings to facilitate easy consultation. As a work of reference it will enable the reader to get a quick view of symptoms and treatment, but it builds up no clinical picture and it gives little indication of the relative importance of different subjects. The seventeen sections range from "growth and development" to "infectious diseases." "Blood disorders" are described in 62 pages and "respiratory disorders" in 15. This gives some indication of the lack of balance, possibly due to the method of classification used, for both asthma and tuberculosis appear outside the respiratory section. In view of the nature of the book the index might have been more extensive. There are no illustrations.

An Introduction to Group Therapy, by S. R. SLAVSON, printed in New York under the auspices of the Commonwealth Fund, is published here by the Oxford University Press at 11s. 6d. There are two justifications for group therapy—first as a time-saving device, and secondly because many psychiatric disorders are concerned with failure to adapt to the demands of society so that treatment in the company of others under controlled conditions may have special possibilities of its own. This book, which is systematically written and well documented, describes the indications for group therapy and its technique, and discusses the interpretation of what actually happens in the therapeutic process. Those who are themselves concerned with the treatment of children will be particularly interested in the opinions of the author as to the types of character and personality suitable for group therapy. A merit of the work, which can be warmly recommended to workers in child guidance in this country, is that it is based on much observation and is not biased by theoretical preconceptions. The group therapy of adults is given only a page or two in connexion with the treatment of mothers, originally in relation to their children's problems.

The Department of Scientific and Industrial Research has issued through H.M. Stationery Office at 4s. 6d. No. 3 of volume 14 (Dec., 1942) of the *Index to the Literature of Food Investigation* compiled by Agnes Elisabeth Glennie, B.Sc., and Catherine Alexander, B.Sc. These brief abstracts are, as usual, listed in sections, followed by an index of authors. The items in the present number run from 983 to 1485 inclusive.

A second edition of *The Nupercaine Handbook*, originally known as *The Percaine Handbook*, has been published by Messrs. Ciba. They are to be congratulated on having collected a voluminous literature on the use of nupercaine and reduced it to a concise but very readable form. The publication is in two parts, the first dealing with spinal and the second with local anaesthesia. Both surgeons and anaesthetists will find much of interest in these booklets, while those who use nupercaine will find them invaluable. A very complete list of references is given at the end of each part. Copies may be had on request from Ciba Limited, Horsham, Sussex.

Correction.—The reviewer of *Blood Grouping Technic*, by Schiff and Boyd (Jan. 1, p. 13), wishes to correct a small slip in his notice. The sentence "Actually the proportion of A_2 is the same in A and AB—about one . . ." should read "Actually the proportion of A_2 is nearly the same in A and AB—about one . . ."

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY JANUARY 22 1944

EPIDEMIOLOGY OF SCARLET FEVER

The greater prevalence of scarlet fever last autumn has led to some quickening of interest in an infection which the younger generation of medical men regard as among the milder of childhood fevers. Those whose memories go beyond the turn of the century, however, learned to have a wholesome respect for scarlet fever, and, despite an 85% reduction in fatality during the past 50 years, they still wonder if the virulent form of the infection will return. The occurrence of rather serious outbreaks of scarlet fever in certain parts of Rumania from 1934 to 1938 led to a fear that the severity of the disease was, in fact, on the upgrade, and encouraged the International Health Division of the Rockefeller Foundation to send an American team of workers to study its epidemiology in that country. The studies were centred round the town of Jassy, and the populations of four villages 3 to 34 miles distant from the town were chosen for intensive investigation. A public health nurse was resident in each village and visited every household over a month, while a medical member of the team visited the village at least twice a week. Once a month about 10% of the village population had their throats swabbed; a Dick test was done on all available inhabitants once a year, and blood for anti-streptolysin tests was taken from all contacts and patients with streptococcal infection. Haemolytic streptococci isolated from throat swabs were tested for Lancefield group, and, if Group A, were further examined for Griffith type. During the 3½ years of the study, interrupted by the war, scarlet fever broke out in only one of the four villages. The observations on this outbreak linked with the great mass of interesting data from the four centres have shed fresh light on the epidemiology of streptococcal infection in general and scarlet fever in particular.[1]

The occurrence of scarlet fever in epidemic form is determined by a variety of factors—e.g., environmental conditions, the nature and prevalence of the infecting organism, and the distribution and resistance of the host-population. Some of the components are measurable; others are not. Of environmental factors, climate and season are both important, for the disease is unknown in the Tropics, and its incidence has a rough relation to the latitude of a country; though why the tropical peoples should be unhappy breeding-grounds for the streptococcus is still unknown. Seasonally, scarlet fever is a disease of late autumn or early winter, rising steeply in September and October to reach its peak in November or December. This seasonal increase has no relation to the occurrence of respiratory catarrhal infections, but seems to be closely linked with the reassembly of schools. Preceding the seasonal wave of clinical infection goes a corresponding rise in the streptococcal carrier rate, as Straker and her colleagues[2] noted for London, and as the American workers have confirmed in Rumania. This antecedent carrier wave has been noted in other epidemic infections, such as cerebrospinal fever and lobar pneumonia, and where there is a large variety of serological types of the infecting organism (as with the pneumococcus and streptococcus) it affects particularly the epidemic strain. Griffith[3] noted this same fact of a particular strain of haemolytic streptococcus suddenly assuming epidemic propensities in a boarding school, but so far no explanation has been given for the phenomenon. An increased carrier rate of the epidemic strain is not always followed by an outbreak of clinical infection. Other points about streptococcal carriers that emerge from the Rumanian studies are that those under 20 years of age are more likely to be carriers than older people, and that, although Dick-positive and Dick-negative children are equally likely to be carriers, Dick-positive adults are about 50% more likely to harbour the streptococcus than are Dick-negative adults. This last point may give some encouragement to the immunization of nursing staff against scarlet fever.

No one would now deny that the haemolytic streptococcus is causally related to scarlet fever, but that there is no special scarlatinal streptococcus perhaps still needs to be emphasized. The American workers collected scarlatinal strains from many countries and found a great variety of serological types among them, with, as a rule, one or two predominant in each country. Thus, Type 1 was most common in Denmark, Hungary, Italy, Portugal, Turkey, China, and Scotland; Type 2 in Norway; Type 3 in Germany; Type 6 in Finland; Type 10 in Rumania, Bulgaria, and Greece; and Type 17 in Latvia and Australia. The types of streptococcus causing scarlet fever are also commonly found in other streptococcal infections, though these are disease-producing streptococci which are incapable of causing scarlet fever. Both scarlatinal and non-scarlatinal types are also found among symptomless carriers, and the number of cases of scarlet fever with which a particular strain of haemolytic streptococcus is associated will depend on the degree of dispersal of that strain throughout the community.

Turning to the host, the American observers believe that susceptibility to scarlet fever depends on two factors—an antibacterial and an antitoxic resistance. The Dick test, which measures immunity to the erythrogenic toxin of the streptococcus, is ordinarily regarded as the test of susceptibility to scarlet fever, and it is true that infection rarely occurs in Dick-negative persons. But in Rumania 44% of Dick-positive persons who became infected with the epidemic scarlatinal strain failed to develop any clinical illness, and the authors postulate an antibacterial immunity which presumably protected the individuals against a local throat invasion by the streptococcus. Instances of medical and nursing staff developing scarlet fever after 10 years or more intimate contact with the disease spring to mind. Evidence of infection with the streptococcus as shown by a rise in antistreptolysin titre occurred not only in

[1] Schwentker, F. F., Janney, J. H., and Gordon, J. E., *Amer. J. Hyg.*, 1943, **38**, 27.

[2] Straker, E. A., Hill, A. B., and Lovell, R., *Rep. Ministry Hlth.*, London, 1939, No. 90.

[3] Epidemics in Schools, *Spec. Rep. Ser. M.R.C.* No. 227, London, 1938.

clinically infected persons but also in apparently symptomless carriers, and even in those from whom no streptococcus was isolated. Failure to recover the streptococcus by throat-swab culture does not, of course, preclude its presence, as it may be deep in the tonsillar crypts.

Summing up, and keeping in mind the many variables, we may suppose that the result for the host of contact with a scarlatinal streptococcus will depend on whether he does or does not possess antibacterial and antitoxic immunity. If he has antibacterial immunity he may either throw off the streptococcus or become a symptomless carrier; if he has antitoxic but no antibacterial immunity he gets tonsillitis; if he has neither he develops scarlet fever.

INFANT MORTALITY IN SCOTLAND

The infant death rate in Scotland is greater than in England and Wales, any British Dominion, or the U.S.A., and higher than in the majority of the countries in Western Europe. This adverse position is due to the slower improvement that has been effected in the rate for Scotland than in other countries. The decrease in infant mortality began in several countries some years before the rate started to decline in Great Britain. Since 1896–1900, when the infant mortality in Scotland was 130 and that of England and Wales 156, there has been a steady decline, and in 1936–40 the rates had fallen to 76 and 55 respectively. A much greater improvement during this period was shown by Holland, where the rate fell from 151 to 37. An inquiry into the possible factors which determined the high level of Scotland's infant mortality has been instituted by the Department of Health for Scotland.[1] The report has four main sections: the mortality of live-born infants, stillbirths, the feeding of mothers and infants, the medical services.

When a comparison is made with England and Wales a large part of the excess mortality in Scotland is found to be contributed by infants aged 1–12 months. The death rate under 1 month (neonatal mortality rate) during 1936–40 was 37 in Scotland and 29 in England and Wales, and for 1–12 months it was 39 and 26. The rates for both countries were very high when compared with New Zealand and Australia, where the rates were 23 and 27 for under 1 month and only 10 and 12 for 1–12 months. The infant mortality rate for geographical divisions varies considerably. The highest rate in Great Britain during the quinquennium 1934–8 was that for West Central Scotland with a figure of 88, while fairly low values were found in the Highlands and Islands. The difference between the mortality of cities and rural districts in Scotland, 86/65, was larger than in England and Wales, 65/50. The experience of Scotland is dominated by that of the city of Glasgow, where over a quarter of the total births of the country are registered. This city has the largest infant mortality of all the cities of Great Britain: during 1934–8 it was 99; the second largest rate was Sunderland, 80. Edinburgh, with a rate of 66, compared favourably with cities in England and Wales. During the first month of life the chief causes of death are prematurity, congenital debility, malformations, and injuries at birth, while during the succeeding months half of the deaths are due to infections. The high infant mortality in Scotland is largely due to a smaller reduction under this heading than has been effected in other countries. Among the factors associated with a high infant mortality the report considers climate, economic and environmental conditions, birth rate, and illegitimacy. The severe winter of the industrial central area may have an adverse effect on child life, but in general there is no evidence that there is an association between infant mortality and climate. Norway and Sweden have mortalities considerably below that of Scotland. There appears to be some relation between mortality at ages 1–12 months and overcrowding and unemployment when the twenty-four large burghs of Scotland are considered, but the association is not large. Glasgow had the highest rate, but nine of the other burghs had a bigger overcrowding index, and five had a greater proportion of the insured population unemployed. Dumfries, with a very low overcrowding and unemployed index, had the third largest rate. In England and Wales there is an inverse relation between infant mortality and social class; though data are not available, this is probably true for Scotland. No large-scale inquiry has been held, but the available evidence shows that infant mortality is correlated with the birth rate. A high birth rate is associated with very early and very late child-bearing and rapidity of breeding—factors that have been shown to have an adverse effect on the chance of surviving the first year of life. Babies are generally infected by their elder brethren of school age, and the later ranks of births have a higher mortality from infectious diseases than the first. A minor factor in determining infant mortality is the size of the illegitimate birth rate. The illegitimate mortality is considerably higher than the legitimate: in 1940 the rates were 120 and 76 in Scotland and 82 and 55 in England and Wales. The percentage of illegitimate births was 6 in Scotland and 4 in England and Wales.

Stillbirths have been registered in Scotland only since 1939, and so far as comparisons can be made there is an excess similar in proportion to that found for mortality during the first month of life. The stillbirth rate tends to be high in the areas where infant mortality is high, but the correlation is probably not large. In the four cities Glasgow, Edinburgh, Dundee, and Aberdeen, during 1939–42 the infant mortality was 95, 64, 77, 74, and the stillbirth rate was 44, 39, 46, 36. No national statistics are yet available for stillbirths by occupation or social class, but small-scale investigations have indicated that possibly the working class have a higher rate than the highest income groups. The returns for England and Wales show that the stillbirth rates are greatest among the first births for all ages of mother, and the rates increase with age of mother and parity after the second birth. The cause of death was unknown or ill defined in one-third of the Scottish stillbirths, but 40% of the total stillbirths could be attributed to hazards of birth and 60% to abnormalities pre-existing in the mothers. During 1938–42 the stillbirth rate in Aberdeen hospitals was 30 per 1,000 births; only 20% were due to hazards of birth, while 80% were due to pre-existing conditions. This small-scale observa-

[1] *Infant Mortality in Scotland.* H.M. Stationery Office. (1s. 3d.)

tion suggests that better ante-natal care would lower the general rate.

The effects of feeding of mothers and infants have to be inferred from rather small investigations, but in the larger investigations covering the general population there is evidence that the adequacy of diets is correlated with economic status. The report suggests that the proportion of inadequately fed mothers in Scotland is high, and because of this there is an excess of unsatisfactory lactations of short duration. The artificial feeding of infants is not satisfactory, from either the hygienic or nutritional standard. Scotland has lagged behind in the provision of maternity and child welfare services. The ratios of ante-natal clinics to births and child welfare clinics to births were in 1937, 1 to 481 and 1 to 336 in Scotland, and the corresponding ratios in England and Wales were 1 to 370 and 1 to 182. The incidence of infections in Scottish maternity hospitals is high. These hospitals are overcrowded, especially the voluntary hospitals, due to a tendency for a larger proportion of mothers to have their confinement in an institution. Among the conclusions reached in the report are that a substantial reduction in the infant mortality of Scotland can be achieved by improving the social and environmental conditions; by enlarging and improving the child welfare services, including the instruction of mothers in infant feeding and hygiene, and the urging of the importance of breast-feeding; more maternity hospitals, and a bigger place in the medical curriculum for teaching of child health and nutrition; and post-graduate courses for family doctors in these subjects.

The above cool analysis of the problem sticks to facts and the inferences to be drawn from them. But when we compare the infant death rates of Great Britain with those of Holland, New Zealand, and Australia, and when we set Glasgow's rate of 99 against England's rural rate of 50 and Edinburgh's rate of 66 during the same period, we cannot help feeling that there is something sadly wrong with our present-day society that such depressing disparities are allowed. A hundred years ago Oliver Wendell Holmes had what he called "my battle for the poor poisoned women." The battle must be renewed—and for the "poor poisoned infants."

THE NEUROTIC CONSTITUTION

The importance of neurosis in the Services is even greater than its considerable numerical incidence would indicate. As distinct from most physical illness, there is the added cost in terms of endangering others and impairing morale. But although in time of war the problem may appear more urgent and the precipitating factors may be more numerous, there can be no doubt that in terms of social inefficiency it is one of the most important problems of peacetime also. The opportunities for systematic study are, however, far greater in wartime, and it is good to know that they are not being wasted. A recent study by Eliot Slater[1] on 2,000 neurotic soldiers presents facts of great interest to the Services; and as in addition he develops with characteristic clarity a well-constructed general hypothesis based on ingenious methods of analysis, his contribution is of the first importance in both war and peace. The sample, all men, consisted of soldiers with a few sailors and airmen who were admitted to an emergency hospital between November, 1939, and June, 1941. It thus contains a considerable number of psychiatric casualties of the battles of France and Belgium. The sample is not fully representative. Psychotics, mental defectives, epileptics, and delinquents are under-represented, as they would often be dealt with in other ways. For the same reason there is selection in favour of severity. Nevertheless, the material does give a fair picture of quite a large part of the Army problem.

It is a sobering reflection that Slater has this statement to make: "Very large numbers of these men, who were as a rule useless as soldiers from the beginning, might have been kept out of the Army had they been given even the most cursory psychiatric examination." Nor was the outcome encouraging. Nearly three-quarters of the patients had to be invalided. Of those returned to duty half had to be invalided at any time from a few weeks up to a year. Improvements have, of course, been effected, as regards both initial exclusion and disposal, and it is to be hoped that better results are now being attained. In the matter of disposal it is stated that no matter what treatment is employed the results are the same. The hopeful approach, it is claimed, is not psychotherapy—the adjustment of the patient to his environment—but the converse—the adjustment of the environment to the patient.

Only a few points can be mentioned from a paper that should be studied in full by all interested in the subject. Military stress is found to be especially potent in producing anxiety and also hysterical symptoms and amnesia. Many men suffering from anxiety states are of good constitutional type; the breakdown would have been difficult or impossible to predict and the prognosis is relatively good. Even here, however, constitutional make-up is still of major importance, while in some other groups—for example, the obsessionals or the psychopaths—breakdown has little or no relation to stress. It is noted that there are profound differences—highly significant statistically—between the endogenous and the reactive depressions as regards frequency of association with childhood neurosis, previous nervous breakdown, anxious traits, and pyknic habitus. Slater also notes how easily the predisposed individual becomes conditioned to such things as dive-bombing, and remarks that there is plausibility in the view that the plastic mind of the child is even more susceptible. The general hypothesis is summed up thus:

"Neurosis represents a special case of a generalized type of behaviour, and signifies a failure of adaptation. The two primary reagents are the individual constitution and the environmental set-up of the moment. The individual constitution is in greater part determined by hereditary factors, to a lesser degree by environmental circumstances of the past producing their effects by organic lesion and psychological and physiological conditioning. These factors, especially the first, determine the form and the severity of the congeries of symptoms which are the so-called neurotic states or neuroses. The momentary environment determines the time of manifestation and to a lesser extent the severity and even the form of the symptoms (e.g., the association of military stress and anxiety). Other factors, such as physical illness or physiological upset and intellectual incapacity, can have an adjuvant effect, and may also influence the form of the reaction (e.g., mental defect in favouring hysterical manifestations, physical illness in favouring hypochondriasis). . . . There is little to be said for the convention by which certain traits, such as aggressiveness and asocial tendencies, are regarded as psychopathic, whereas tendencies towards anxiety, instability of mood, dissociation, etc., are regarded as neurotic. If we wish to introduce system and reason into our nomenclature it will be necessary to discover further traits showing the degree of specificity and independence that obsessionality seems to show. . . ."

This hypothesis is put to the ingenious test of a "factor analysis" analogous to those tests familiar to the educa-

[1] *J. Neurol. Psychiat.*, 1943, **6**, 1.

tional psychologist. Within the limits of the statistical methods employed, and in view of the inevitable errors of observation, the test proves to be highly favourable to the hypothesis. The double assumption of a neurotic constitution and a poor intelligence accounts for more than 90% of the observed variability. If it is true that hitherto intelligence has been considered too exclusively in quantitative terms it would seem to be even more true that far too qualitative a view has in the past been taken of temperamental traits. A recognition of the quantitative aspect of neurotic tendencies may well lead to a clearer understanding and to important advances in knowledge.

LIPOPHAGIC GRANULOMATOSIS

Numerous terms have been proposed for a pathological process, usually seen in localized fatty tissues, whereby phagocytosis of fat droplets by giant cells sets up a cellular granulomatous condition in which fibroblasts, leucocytes, and other cells take part. Such granulomata have been described in the breast, subcutaneous tissues, and mesenteric fat depots, and appear to result from some local fat necrosis with liberation of lipolytic ferments and subsequent foreign-body reaction of the neighbouring tissues. Besides such local lesions a rare but apparently identical histological condition is seen now and then in which the changes occur in the inner coats of the small intestine and involve the mesenteric lymph nodes. S. Sailer and R. J. McGann[1] have described such a case and reviewed the literature of this subject without, however, precisely defining either the aetiology or the symptomatology, but adopting the title "lipophagic granulomatosis." In their case post-mortem examination showed massive lipophagic granulomatosis of the abdominal lymph glands, and infiltration of the mucosal villi of the small intestine with large foamy mononuclear cells and giant cells. The colon was unaffected, but most of the small intestine showed these changes, which spread into the muscularis mucosae and were associated with much general cellular infiltration. Stained with scarlet red and osmic acid, these large cells gave the reactions for neutral fat, as did cells in the adjoining lymph nodes. Clinically the patient was observed for a period of two years, during which time he suffered from abdominal pain, weakness, loss of weight, and anorexia. The abdominal pains were worse after eating but were almost constant during the day. There was no steatorrhoea. A moderately severe hypochromic anaemia developed which did not respond to treatment, including blood transfusion. A terminal peritoneal effusion occurred and an acute bronchopneumonia. Some other cases in the literature have shown a polyarthritis. Of the various explanations put forward to account for these remarkable pathological changes none is wholly satisfactory. Lymphatic obstruction causing stasis and backflow of chyle in the intestinal lacteals seems to be ruled out. Whipple[2] suggested that the fat absorbed in the intestine became in some way abnormal or possessed some toxic property, in view of the process being limited to the structure concerned with fat absorption, while lymphatic tissues elsewhere were practically normal. Others have postulated some disturbance of pancreatic lipase secretion whereby the intestinal fat is abnormally split and the absorbed abnormal products provoke a foreign-body response in the intestinal mucosa. Whatever may ultimately prove to be the explanation, accounts of such unusual and striking changes deserve careful study, because it is often through such apparent errors in metabolism that light is thrown upon normal processes.

[1] *Amer. J. digest. Dis.*, 1942, **9**, 55.
[2] *Johns Hopk. Hosp. Bull.*, 1907, **18**, 382.

TUBERCLE BACILLI IN MILK

One of the proposals in the Government's White Paper on milk policy, discussed in our issue of Aug. 7, 1943, is to define scheduled areas within which no milk shall be sold unless it is adequately heat-treated, tuberculin-tested, or "accredited" coming from a single herd. The wisdom of this last exception has been questioned in a number of quarters. Figures recently collected by Sir William Savage[1] show that the proportion of samples of "accredited" milk found to contain tubercle bacilli was almost consistently higher than that of ungraded raw milk. The danger of allowing "accredited" milk to be sold raw is aggravated by the present state of the law, which makes no provision for the stoppage of the infected milk supply. Under the Tuberculosis Order a cow suffering from a tuberculous udder must be condemned, but mixed milk shown by bacteriological examination to contain tubercle bacilli may continue to be sold. What happens in practice when tubercle bacilli have been demonstrated in the milk of a given herd is that the local medical officer of health informs the county medical officer, who, in his turn, passes the information on to the divisional veterinary inspector of the Ministry of Agriculture. Nothing more is then heard by the health authorities until a notice is received, usually two or three months later, that the tuberculous cow has or has not been found and that the milk is now free from tubercle bacilli. This mechanism is cumbersome, laborious, and time-consuming, and fails to protect the public in the meantime from the risk of drinking tuberculous milk. In his report for the years 1939 to 1941 Dr. G. G. Wray, M.O.H., Fulwood Urban District, suggests the following alternative procedure: (1) Compulsory notification, under heavy penalty for non-compliance, of tuberculosis in cattle; (2) provision of free veterinary inspection immediately on notification; (3) prohibition of the sale of milk from the farmer till after adequate heat treatment, the producer to be guaranteed against any monetary loss on the sale of this milk; (4) payment to the producer of a fee for notification, and of compensation equal to the full market value of the cow after the animal is slaughtered; (5) authorization for the local authority to provide a heat-treatment plant itself or to license a local commercial plant for this purpose; (6) responsibility for the efficient discharge of the whole scheme to be placed on the local authority. It is believed that this alteration in procedure, by placing the responsibility for action on one authority instead of three, would obviate the defects of the present system.

Attractive as this scheme may appear at first sight, it is doubtful whether it would work out satisfactorily in practice. In the first place, very few farmers could be expected to diagnose udder tuberculosis themselves. Even after tubercle bacilli have been demonstrated in the mixed milk of a herd a skilled veterinarian may have great difficulty in finding the infected cow, and often has to have further bacteriological examinations carried out before his search is successful. Secondly, how is free veterinary inspection to be provided by a small local authority? Is the authority to call in a private veterinarian, or is it to command the services of the Divisional Veterinary Inspector, who, it will be remembered, is a whole-time servant of the Ministry of Agriculture? Again, would it be economical for a small local authority to install pasteurizing equipment for the milk of a single herd, and who would be qualified to run it? Other difficulties might be raised. Nevertheless, the contention that raw milk known to contain tubercle bacilli should not be allowed to be sold in the liquid market is absolutely sound, and it is to be hoped that in the new Milk Bill such a prohibition will be incorporated.

[1] Memorandum of the People's League of Health on "Measures to Improve the Quality of the Nation's Milk Supply," Sept. 24, 1943, London.

THE LATE DR. G. C. ANDERSON

MESSAGES OF CONDOLENCE

The British Medical Association has received messages of sympathy on the passing of Dr. Anderson from all parts of the country and from many parts of the world. The Minister of Health in a letter to Lord Dawson, the President, says with what "very real regret I have heard of the death of Dr. Anderson, and I should be grateful if you would convey my personal sympathy to the officers and members of the B.M.A. I have heard much of the wise and courageous advice with which for so many years he helped my predecessors. . . . I fear we have lost a man whose services at this time would be invaluable."

The following message has been received from the Registrar of the Royal College of Physicians of London: "The Council of the Royal College of Physicians desires to convey to the British Medical Association its sense of the great loss sustained not only by the Association but by the whole profession of medicine in the death of Dr. G. C. Anderson, whom the College was happy to count among its Fellows. His wide knowledge of the conditions of medical service, his statesmanlike qualities, and his great gifts as a negotiator will be sorely missed, and the Council wishes to place on record an expression of its sense of the irreparable loss which the profession has sustained, and its sympathy with the British Medical Association in the loss of so able and so devoted a Secretary."

Tributes have come from the Federal Council of the Association in Australia, the Canadian Medical Association, the New South Wales Branch, South Australian Branch, and Victorian Branch, and the Jamaica Branch; from many Local Medical War Committees, Divisions and Branches of the Association, and Local Medical and Panel Committees. Messages of sympathy have been received from the Medical Branches of the Service Departments, the Medical Personnel (Priority) Committee, Medical Association of Eire (I.M.A. and B.M.A.), the Medical Women's Federation, Medical Association of South Africa, Editor and Staff, *South African Medical Journal*, Society of Medical Officers of Health, Medical Superintendents' Society, Association of Clinical Pathologists, British Hospitals Association, Voluntary Hospitals Committee for London, British Hospitals Contributory Schemes Association, Merseyside Hospitals Council, British Dental Association, National Association for the Prevention of Tuberculosis, Royal College of Nursing, Pharmaceutical Society of Great Britain, British Social Hygiene Council, National Ophthalmic Treatment Board, Central Office for Refugees (Medical Department), Central Council for Health Education, the London Hospital, the Westminster Hospital, the honorary medical staff of the East Surrey Hospital, Royal Society for the Prevention of Accidents, Joint Committee of Approved Societies, National Association of Insurance Committees, National Association of Clerks to Insurance Committees, Rotary International, British Medical Finance, Ltd., the Advertising Association, as well as from many individual colleagues and friends.

Mrs. Anderson has received a very large number of letters of sympathy from individual friends in the profession and from committees with whose work her husband was closely associated. She is very grateful for the kind thoughts of all, though it will be appreciated that she finds it impossible to reply to each personally. She hopes that medical friends and colleagues will take this note as an expression of her gratitude for the sympathy so widely expressed to her in her loss.

By an oversight the name of Dr. C. L. Batteson, who represented Epsom College and the London Panel Committee, was omitted from the list of those attending the memorial service at St. Pancras Church, and published in last week's issue.

The Hospital Saving Association has just paid £171,743 to the London voluntary hospitals as a final distribution. This brings the total for the year to £600,193. Once again it has been calculated at 9s. per day for every H.S.A. in-patient and 7s. 6d. for each out-patient. This brings the total distributed by the H.S.A. during its 21 years' existence to just short of ten million pounds. All this money has been collected by voluntary workers, of whom there are now some 13,000 in the Greater London area. The number of H.S.A. groups and contributors is steadily growing.

CANCER RESEARCH: A COMPLEX PROBLEM

The Duke of Gloucester, in presiding over the annual meeting of the British Empire Cancer Campaign, now in its twenty-first year, spoke of his approaching residence in Australia as Governor-General. He said that this would not mean for him a severance from the Campaign, which is represented by a Branch and by several affiliated organizations in the Commonwealth. The Duke also announced that the trustees of the Bernhard Baron Charities Fund had, for the second time, allocated to the Campaign the sum of £10,000, on this occasion for the establishment of a cancer research fellowship.

The adoption of the annual report—a document almost up to pre-war size—was moved by Prof. E. C. Dodds, F.R.S., who gave a picture in brief of "cancer research as it really is." The whole technique of pathology and biochemical research, he said, had been changed by the introduction of new methods, such as the use of isotopes in studying metabolism, the ultra-centrifuge and electron microscope in the study of the form and structure of matter, and the introduction of the cyclotron in the study of matter from the physical aspect. The technical use of these and other instruments required new and deep knowledge of a most complex character, in addition to the knowledge of the problem to which the instruments were applied.

The cancer research worker of the past, said Prof. Dodds, stood no chance of making any fundamental discovery because he was handed a problem far too intricate and complicated in view of the development of his intellectual and scientific processes. It was as though one of the classical Greek philosophers were faced with a modern motor-car engine. All the sciences necessary to its understanding—electricity, magnetism, chemistry, metallurgy—were unknown to him. To-day the research worker in cancer had to start from the beginning. The vast amount of knowledge already accumulated was valuable in plotting out the mountain peaks, but he had now to start on the details, which would take time, though the future looked more certain than ever before.

Synthetic Oestrogen for Cancer of Prostate

Speaking as one of "the back-room boys" or laboratory workers in the chemical field, Prof. Dodds said that it was with particular pleasure he drew attention to one positive result—namely, the treatment of malignant disease of the prostate with synthetic oestrogens. The American work on the treatment of this disease by the administration of substances by mouth, and the subsequent complete disappearance of symptoms, had been wholly confirmed, and "for the first time in the history of mankind it is possible to state that one form of cancer can be completely controlled and the patient rendered symptom-free by the administration of a few pills by mouth each day."

In the annual report of the Campaign further reference was made to this substance, diethylstilboestrol, the usefulness of which, it was stated, seemed to be restricted to cancer of the prostate, though, even so, a new line of research had been opened up along which in the near future many workers were sure to pass. The substance is a synthetic chemical product resembling a number of glandular products, and possesses many chemical affinities, all of which, in course of time, will be brought under examination.

Carcinoma in Other Sites

The report also records the work of the Campaign's Clinical Research Committee, which this year presents a detailed analysis of over 1,000 cases of primary carcinoma of the lung. The investigation confirms the finding that cancer of the lung is much more common in males than in females, and it shows that engineers, mechanics, painters, and decorators are more liable to it than other occupational groups—for example, clerks and typists. The difference is said to be statistically significant, but it has to be borne in mind that the average age of the cancer patient is higher than that of the census population, and many clerks and typists change their occupation before reaching the cancer ages.

Some work is quoted from the cancer research committee of the Marie Curie Hospital suggesting that the cervix uteri is one of the sites of cancer in which great improvement might

be expected in the number of cures if intensive propaganda leading to earlier diagnosis were undertaken. Irregular haemorrhage at the menopausal and post-menopausal periods may be significant, and yet it is apt to be regarded by the patient herself as a natural phenomenon, and medical advice is sought only when symptoms become urgent. In the radiological field the work at St. Bartholomew's cancer research department is reported as suggesting that certain types of cancer are curable by high-voltage *x*-ray therapy (of the order of 1,000 kV), where *x*-ray therapy of the order of 200 kV produces at most a temporary palliation of symptoms.

Important investigations are being carried out both in London and in the provincial centres of the Campaign with the aid of the substance known as benzpyrene. In spite of threatened shortage the Campaign has been supplied with quantities of pyrene, from which benzpyrene is convertible. The substance figures in the reports from several centres, particularly in the study of the induction of skin cancers in mice. The editing of the report is again the work of Mr. J. P. Lockhart-Mummery, who has undertaken this task now for twenty successive years.

Nova et Vetera

THE HISTORICAL MEDICAL MUSEUM

At a recent meeting of the Section of History of Medicine of the Royal Society of Medicine, Sir WALTER LANGDON-BROWN presiding, Dr. S. H. DAUKES, director of the Wellcome Museum of Medical Science, lectured on the future and possibilities of the Historical Medical Museum. The lecture was accompanied by a large model of one of the ten halls of the Wellcome Historical Medical Museum, which is in process of reconstruction, and by an exhibition of rare books from the Wellcome collection. These included a number of first editions, notably a first edition containing all the chief works of Malpighi and a first edition of Morgagni's *De Sedibus*. Over forty works were displayed, and it was stated that fewer than half of them were to be found in the libraries of the Royal College of Physicians or the Royal Society of Medicine.

Dr. Daukes said that a museum must be a living thing with a message, not a valley of dry bones. Too often museums were treated as mausoleums, when they ought to be schools for the creation of ideas and exhibits of raw materials from which those ideas were formed. He liked the definition of a good museum: "Instructive labels illustrated by well-selected specimens." The Wellcome Historical Medical Museum was founded by Sir Henry Wellcome and opened by Sir Norman Moore in 1913. It was unfortunately arranged. There were two types of collector, one who spread a net and the other who used a rod and line, and Sir Henry Wellcome belonged to the former category. He detected some possible value as a museum exhibit in most insignificant objects, with the result that his collection became gigantic—there seemed to be enough weapons from all over the world to arm the Home Guard! His books and MSS. ran into half a million. The crude exhibition at Wigmore Street represented only a small part of the total collection and was never intended to be more than temporary.

Plans for Future Display

After Sir Henry Wellcome's death in 1936 it became necessary to examine the material critically, and Dr. Daukes said that, having himself been responsible for the Wellcome Museum of Medical Science, he was given the task of arranging the historical museum on permanent lines. It was desired to preserve the identity of both museums, but to link up their activities. The space available for the Historical Medical Museum consisted of ten large halls on three floors, each hall measuring 110 by 40 feet. The exhibits would be arranged in an order partly cultural and partly chronological as follows:

I. Cosmogony, palaeopathology, evolution of man, prehistory.
II. Primitive medicine of all ages, Mexican and Peruvian medicine.
III. Medicine of Ancient Egypt, Chinese and Indian medicine.
IV. Greek, Alexandrian, Graeco-Roman, and Byzantine medicine.
V. Mediaeval medicine.
VI. Renaissance to end of seventeenth century.
VII. Eighteenth and part of nineteenth centuries.
VIII. Nineteenth and twentieth centuries.
IX. History of diseases (to link up with modern museum).
X. Central hall with library for reference and research.

In each hall—of course with modifications according to the era—the sequence would be:

Contemporary history as affecting the medicine of the period; general survey; chemistry (or alchemy) and physics in relation to medicine; physiology; anatomy; surgery; medicine, including aetiology (bacteriology, etc.), pathology, clinical aspects, and treatment (rational, superstitious, folklore, etc.); education and hospitals; prevention (social medicine).

It was hoped to have two floors ready within a year of the cessation of hostilities in Europe, and the remainder would be opened hall by hall as it was completed. An elaborate system of labelling and cataloguing would be arranged, and explanatory summaries of the exhibits would be kept up to date. Literature was the backbone of history, and books, MSS., and letters would be freely used as museum exhibits. As a rule literature was used to elucidate the objects; here also the objects would be used to elucidate the literature. Each section so far as possible would convey the atmosphere of its period by large-scale models and tableaux, including, for example, reconstructed pharmacies. There was too much inclination to judge the past in the light of present knowledge; it was necessary always to judge of achievement by contemporary history. Much of Sydenham, for instance, in the light of modern knowledge, would be accounted nonsense, but in the light of contemporary knowledge it was most wise. It was deplorable that younger members of the profession took so little interest in the history of medicine. Teachers might use a few historical details as a kind of *hors d'œuvre* to their lecture, but more than this was necessary; the historical background ought to have a closer practical application. It was hoped that the resources of the new museum would be freely used for illustrating papers and for loans to exhibitions. Thanks to the beneficence of the founder, funds were available for carrying out the scheme.

Function of a Museum

Dr. Ashworth Underwood said that Sir Henry Wellcome had much in common with Sir Hans Sloane and John Hunter. All three were great practical men in other fields than museum-making and all three were great collectors, but Wellcome alone was able to provide completely for the future of his collections without the help of State or university. Dr. F. Parkes Weber said that it was high time there was such an undertaking. Careful thought should be given to what was included in a museum of medicine. In his view a Wedgwood medallion of Hippocrates, however interesting as an object of art, had no value in medical history. He would prefer a copper coin from Cos with a portrait of Hippocrates, though that, of course, would not be contemporaneous.

Sir Frederick Kenyon, formerly Director of the British Museum, urged the need for a lecture theatre in association with a museum. He was of opinion also that not all the material should be in the "show window." Sir John Forsdyke, keeper of Greek and Roman antiquities at the British Museum, said that Wellcome's was the best method for the formation of a museum—namely, the accumulation of an abundance of material, with the opportunity of discarding what was not needed, rather than the opposite plan seen in many municipal museums which started with empty shelves. Mr. Arundell Esdaile, secretary of the British Museum, said that there was a great charm about a fortuitous concourse of objects, because it was possible to select from them what was wanted, and nearly always to find a good home for what was not.

Dr. Daukes, in reply, said that there would be an extremely fine lecture hall attached to the museum. He agreed that it was desirable only to show exhibits which answered the immediate purpose, while others were stored and brought out as required, and this plan was being followed. The question of the ethnographical section was being considered very carefully in order to see how far it bore on the history of medicine and how much of it could be allocated to other museums. The Wellcome Museum would be for students in the broadest sense of the word. It would be arranged in bays, so that the student could pursue his work in relative detachment, and portable chairs and tables would be provided which he could carry with him from bay to bay. But it was not intended to provide a peep-show for any casual passer-by on the Euston Road.

The medical teaching film on the diagnosis and treatment of scabies made by the Ministry of Information at the request of the Ministry of Health has been widely shown and has already proved successful. In three months it has been shown by means of the mobile units of the Ministry of Information to 254 separate audiences totalling 21,326 doctors, nurses, and other personnel interested in the subject of scabies, and copies have also been lent out to others who had the use of projectors. A second shorter film, lasting 7 minutes, called "The Scabies Mite," has just been made as a specialized scientific film for specialist audiences. Without touching on the subject of the diagnosis and treatment of the disease it incorporates the photomicrography of the longer film to give a full explanation of the life cycle of the acarus. Particulars of the arrangements which can be made for the exhibition of these films may be had from the Ministry of Information Regional Offices or from the Central Film Library, Imperial Institute, South Kensington, S.W.7.

Reports of Societies

CROSS-INFECTION IN FEVER WARDS

At a meeting of the Fever Group of the Society of Medical Officers of Health on Dec. 17, 1943, with Dr. ANDREW TOPPING in the chair, Dr. R. B. BOURDILLON opened a discussion on the control of respiratory infections.

An average vigorous sneeze, Dr. Bourdillon said, emitted 100,000 bacteria-carrying particles, of which in still air about 4,000 would remain suspended half an hour later. Talking emitted fewer particles, the number varying with different people. For three different laboratory workers reading out loud, the total number of infected particles collected per minute was 1,500, 250, and 75 respectively. About half of these were large enough to collect on open Petri plates. A number of different patterns of masks were then shown.

Dr. JOYCE WRIGHT reported the results of an investigation into the control of dust-borne infection in measles wards. In a test ward, in which for three weeks the floor alone was oiled, the haemolytic streptococcal content of the ward air during bed-making was but slightly less than that of a control ward. During this time, and throughout the work, the majority of the aerial streptococci were Type 6. Among the patients the cross-infection rate with Type-6 streptococci was 58.1% in the test ward and 53.3% in the control ward; the middle-ear complication rate due to Type-6 cross-infection was 18.4% in each. As oiling the floor was evidently not enough to control cross-infection, further measures of dust control—by treating blankets, sheets, patients' garments, etc., with technical white oil—were introduced into the test ward. During the subsequent nine weeks the mean haemolytic streptococcus count in the air of the test ward during bed-making was reduced by 97.5%. Compared with the control ward, the mean bacterial count in the air during bed-making and sweeping was 91% less in the test ward, and the mean haemolytic streptococcus count was 98 to 99% less. Furthermore, the Type-6 cross-infection rate was 18.6% in the test ward, while in the control ward it rose to 73.3%. The middle-ear complication rate due to Type-6 cross-infection was 2.8% in the test ward, compared with 14.3% in the control ward. The results suggested that dust was important in the spread of streptococci in measles wards; that the oiling of bed-clothes, etc., and of floors reduced the infected dust in the air; and that, as a result, the cross-infection and complication rates were lowered. Attention should also be paid, however, to the control of droplet spread, particularly by convalescent patients, and of contact spread by toys, books, baths, etc., and by the nasal toilet.

All but a few of the patients in both wards received an intensive sulphonamide course, usually sulphanilamide or sulphathiazole. The cross-infecting Type-6 streptococcus was found by *in vitro* tests to be sulphonamide-resistant. Differing results recorded by various workers on the prophylactic value of sulphonamides in measles wards might be explained by differences in sulphonamide susceptibility of the cross-infecting strains of streptococci.

Dr. H. STANLEY BANKS, in discussing chemoprophylaxis of respiratory complications, said that the case-fatality rate of measles in the Park Hospital had fallen from 6.3% of 1,290 cases in 1933–4 to 0.3% of 1,625 cases in 1942 and 1943. There was a parallel but less pronounced fall in the incidence of bronchopneumonia, which was chiefly due to the almost total abolition since 1940 of bronchopneumonia occurring after admission. This change exactly concurred with the operation of a scheme of prophylaxis by sulphapyridine for 5 days from admission. Another apparent effect of this chemoprophylaxis was seen in the steep fall in incidence of suppurative otitis media after admission from 13.6% in 1933–4 to 3.8% in the closely corresponding epidemic of 1943. Further analysis showed that this reduced amount of otitis media was with few exceptions in the period after the ninth day from admission—that is, after the chemoprophylaxis had ceased to operate. Such otitis media as there was therefore presumably came from ward cross-infections, manifesting themselves clinically when chemoprophylaxis ceased. To reduce these infections to the lowest level the period of isolation in open wards should be as short as possible in all uncomplicated cases—e.g., 12 days. Chemoprophylaxis might be extended for longer than five days, but this introduced certain difficulties. But prompt and adequate chemotherapy of these cases of acute otitis media much improved the outlook. The best drug was sulphathiazole and the dosage must be high—as for severe infections—and begun within the first few days—the earlier the better. A course of 9 or 10 days completely cured about two-thirds of the cases, and most of the remaining third could be cured by a second or even a third course applied without any break after the first. Occasional white blood counts were necessary, but young children tolerated the drug remarkably well. More than 90% of the cases recovered within 3 weeks. In the four years of this experiment there had been only four mastoid operations—one each year—whereas in 1938 there had been 19 mastoid operations in the hospital. By means of chemoprophylaxis, chemotherapy, sharp clinical supervision, and short isolation periods, morbidity from streptococcal cross-infections could be kept very low even under present working conditions in open wards. These were at least practicable measures. The general use of masks was impracticable, and such measures as oiling of blankets and floors had not yet been proved to be practicable. Dr. Wright's high figures of cross-infections were apt to give a false impression of the magnitude of the problem. They referred only to the peak period of the epidemic and in other respects also were exceptional.

Dr. H. J. PARISH thought that spraying with aerosols would not control respiratory infections, as organisms might remain viable for 10 to 15 minutes, during which time infection could take place. He wondered, too, whether oiling of floors and blankets was necessary in modern fever hospitals with good bed-spacing, adequate ventilation, etc. He had seen numerous barriers in use between beds, but was doubtful of their efficiency.

Dr. BOURDILLON thought a short barrier opposite the patient's head was an advantage provided the patient could be taught to cough or sneeze directly at it.

Dr. MITMAN said that in combating aerial cross-infection it must be realized that hospital air and dust carried a bacterial load enormously in excess of that outside, and that almost all respiratory infections were intramural events. The bacterial load of a room depended on the rates of addition and removal of organisms; measures of control aimed at influencing one or other of these rates. Methods of limiting the rate of addition included the avoidance of overcrowding, observance by individuals of the rules of hygiene, the application of modern architectural and engineering principles to ward construction, and the practice of fever-ward management. Guarding the mouth and nose with a big handkerchief during sneezing and coughing should be a cardinal rule of hygiene: masks were merely an extension of this principle. Sneezing into the air should be forbidden as was spitting—a practice now almost eliminated. Those in an infectious state should avoid crowded places and social calls. Dust traps must be avoided in ward construction and furnishing. Medical superintendents should review their hospitals' practice of dealing with blankets after use by a patient. Oiling was only an expedient, and he was convinced that blankets as an article of bed-clothing in hospital wards must go. Only in patients with tuberculosis had the danger of the pocket handkerchief been appreciated. Of methods of removing bacteria, aerosols, ultra-violet irradiation, and air-conditioning were still experimental, but ventilation was an old and tried practice of the utmost importance. Wells considered ventilation fair if there are 25 to 100 turnovers per hour, obtainable in mild weather with open windows. Fewer than 10 turnovers per hour constituted bad ventilation and was quite common during war if windows and doors were closed and air replacement depended on natural seepage. Good ventilation with a rate equivalent to 100 to 500 turnovers per hour could, according to Wells, be obtained only by the use of germicidal ultra-violet lamps irradiating the upper air—equivalent to removing the ceiling and ventilating upwards.

Dr. W. GUNN said there was probably a future for ultra-violet irradiation for checking cross-infection, but not until dust was satisfactorily eliminated, as it protected the organisms from the lethal effects of radiation. The cross-infection and complication rates recorded in Dr. Wright's communication appeared high compared with hospital figures for other measles epidemics, but the experiment took place over a short period at the

height of a severe epidemic when some degree of overcrowding could not, for a variety of reasons, be avoided.

In reply to a question, Dr. BOURDILLON said that for hospital purposes with unlimited laundry facilities he favoured the gauze mask provided it was changed frequently. On the subject of ward ventilation he felt that very high rates of air exchange could not be tolerated by the older patients, who felt much too cold.

Correspondence

The Nature of Concussion

SIR,—I was very interested to read Prof. Jefferson's article (Jan. 1) on concussion, especially those parts of it which dealt with consciousness and unconsciousness, my special interest being in the *recovery of memory* in these cases. Medical psychologists are very familiar with cases of traumatic amnesia in which there is no discernible organic change, but in which there is loss of memory, which is recoverable, and, indeed, is often spontaneously recovered. Where is the dividing line between these cases of psychological amnesia and cases of the unconsciousness of concussion? I have come to the conclusion that there is no specific dividing line on the psychological side, a conclusion based on the fact that even in cases of severe concussion the *whole* memory of the experience and accident is recoverable by methods of free association, hypnosis, and narco-analysis. If that is so, obviously whatever happens in concussion is not something which so affects the brain that consciousness is obliterated.

For the space of 18 months in the last war, in a ward of 60 "shell-shock" patients, I paid particular attention to the complete recovery of memory in those cases of concussion (in which there is no discoverable physical injury) as a method of treatment, and never failed to recover the memory of the traumatic experience *in detail*. This has been repeated by many physicians in the interval between the wars in cases of concussion as from car accidents, and in many cases in this war. A recent case is that of an A.R.P. warden, who was blown up in the road during the London "blitz" by two shells one on each side, had amnesia for four days, and for eighteen months suffered from severe headaches, insomnia, and severe pain in his neck, which was flexed on the chest as though broken. The whole memory was recovered of the explosions, the blasts of air, being carried up the height of a suburban house, his thoughts while in the air (that he must at all costs avoid the spiked railings: that he must fall in a way so as to break the fall as he had learnt in wrestling), his crash on his back in a field 20 yards away, the awful jerk of his neck forward as he had his helmet on, lying there thinking he was dead ("So this is death!"), that Tom R. would be coming round to do his gracious job of putting his dead body in his sack; and then his realization he was not dead. He subsequently had a fugue state with loss of memory for four days, during which he wandered about London visiting streets where he had never been before, the names of which he confirmed by visits after his recovery. All these experiences were *relived* and remembered, with the result that he completely recovered and has now started a new business of his own.

The recovery of such lost memories is a familiar technique of every medical psychologist who uses abreaction as a form of treatment. To say, as one writer does, that psychological "amnesia" relates to the part of the experience which we can recover, and "concussion" to what we cannot recover, is to make the diagnosis of concussion depend on the skill and patience of the physician. Failure to recover is usually due to lack of persistence. That these memories are not merely imagined is proved by the fact that the patients subsequently clearly remember these experiences like any other. It is also an interesting fact in contrast with these cases that when the patient is put under an anaesthetic during the period of amnesia, he cannot recover any memories of the surgical operation (as we should expect that he would not); and we have also failed to recover the memory in cases of contusion—such as fracture of skull—these failures acting as a "control," indicating the genuineness of the memories in concussion. Obviously the "concussed" patient is not altogether unconscious, though he appears to be so; rather he suffers from amnesia. We suggest, however, that in these cases of concussion the patient is in a *low state* of consciousness, which is, therefore, not recalled in the full and lively consciousness of ordinary life. An analogy to such dissociation is found in the fact that we may get up in the night, carry out some routine act like closing a banging door, and yet recollect nothing of it in the morning. We are in a somnambulic twilight state of consciousness, which seems to be the state of the patient with "concussion." The amnesia in such cases may be due to the fact that the experience is on a different level of consciousness, and therefore dissociated from ordinary consciousness, as indeed it is in states of hypnosis. For that reason we welcome Prof. Jefferson's use of the term "stupor," for in a case of stupor the patient can often hear and understand what is said though unable to respond, as is also frequently the case with a patient going under an anaesthetic who hears the remarks of those around. Prof. Jefferson's other term "parasomnia," which he defines as a "state in which there is no response to stimuli, verbal or mechanical, except those of a reflex nature," does not rule out consciousness, for we may be conscious without being able to respond in any way, even reflexly. Lack of response does not necessarily imply lack of consciousness.

Again, Prof. Jefferson says that the muttering of the concussed patient shows that cortical actions continue: it also suggests that consciousness is maintained as our experiments seem to prove. If it is true, as Prof. Jefferson says, that "the beliefs expressed above have minimized the importance of the cortex in the picture of concussion," this also is in keeping with our psychological experiments, which indicate that consciousness and therefore cortical function is maintained in "concussion," though in a low form. So far, Prof. Jefferson's observations support our conclusions. But in so far as Prof. Jefferson is out to prove that, because the cortex is not put out of action, the unconsciousness must relate to some other part of the brain, this is negatived if consciousness is proved *not* to be obliterated.

Indeed, any definition of "concussion" based on the idea that in concussion the brain as a whole or any of it is so put out of action that consciousness is obliterated is untenable, since consciousness seems to persist throughout, and can be recovered.

Finally, the definition of "consciousness" as a state implying "insight" is surely unsatisfactory as a definition, for it defines an unknown by a more unknown, for what is insight but a state of consciousness or awareness of the object: indeed, insight implies more than consciousness, since it also implies awareness of the *meaning* of an object.—I am, etc.,

Psychological Department, King's College. J. A. HADFIELD.

Sciatica

SIR,—Prof. Platt's letter (Jan. 8, p. 57) is interesting but not very helpful, because he does not tell us what in his opinion is the common cause of sciatica. Surely there must be at least one common cause for so common a complaint. I agree that true sciatic neuritis is comparatively rare, and that the really common cause of sciatica must be sought elsewhere. It is not to be found in the spinal tumour or in the prolapsed intervertebral disk. Prof. Platt speaks with some enthusiasm of the prolapsed disk and of the rich harvest of cures by removal of the projecting fragment *in cases selected from the large numbers of sciatica patients* who continue to find their way to orthopaedic surgeons (italics mine). The truth is that, in spite of all that has been written and said about it, the prolapsed disk is a comparatively uncommon condition. In the largest series of cases hitherto published (300 cases from the Mayo Clinic) the incidence was 3 to 4% of sciaticas, which means that 96 to 97% of sciaticas are *not* due to prolapsed disks. Visceral pelvic disease is common, but not as a cause of sciatica in orthopaedic practice. Destructive lesions (inflammatory or new growth) of the lumbar spine, pelvis, and femora are not common, if we except tuberculous disease of the hip, which is not a cause of sciatica. Tuberculous disease of the sacro-iliac joint is a definite cause of sciatica, but it is itself a rare disease. Neither sacro-iliac strain nor lumbosacral strain is ever a cause of sciatica. It is curious that, in giving

an example of referred sciatic pain, Prof. Platt should have singled out osteo-arthritis of the hip. This is mentioned as a cause of sciatica in all the textbooks, and it has been copied from book to book for many years. But osteo-arthritis of the hip is practically never a cause of sciatica, although many patients with osteo-arthritis of the hip also have osteo-arthritis of the lumbar spine.

What does it all boil down to? What have we got left? What is the really common cause of this very common complaint? Prof. Platt says that "the causal lesion in a large group of cases is to be discovered in that complex system of articulations embraced by the lumbar spine and the sacro-iliac joints." This sounds very impressive, but it means precisely nothing, unless by any chance it means spinal arthritis! There are quite a number of these little joints, but there is nothing particularly complex about them and they behave very much like any other joints. The mystery deepens when we come to Prof. Platt's last and apparently most important group of cases—namely, "pseudo-sciatica—fibrositis of the fascial, ligamentous, and muscle masses in the lumbar region, buttocks, and thighs." There is not a shred of evidence that any of these conditions is directly concerned in the causation of sciatica. A patient either has sciatica or he has not. Pseudo-sciatica may well rank with P.U.O., D.A.H., and other well-known subterfuges in the absence of a correct diagnosis.

Prof. Platt is right in saying that I have never claimed the "vertebral arthritis theory" as my own creation, but he is wrong in saying that it has my unqualified support, because I have always recognized that there are other causes of sciatica. However, I do know that the majority of my patients with sciatica have symptoms and signs of spinal arthritis and that they respond to the appropriate treatment. What are *the majority* of Prof. Platt's sciatica patients suffering from?—I am, etc.,

London, W.1. A. S. BLUNDELL BANKART.

SIR,—While I am in agreement with much of Mr. Harry Platt's reasoned and in many ways skilful defence of the orthopaedic surgeon's point of view with regard to sciatica—particularly do I like his five clinical groups—I take exception to what he says about manipulation. Many years before Goldthwait and Osgood of Boston ever mentioned sacro-iliac joint strain in connexion with sciatica, osteopaths had pointed out that many cases of sciatica were due to postural defects or to positional "lesions"—strains, if you prefer it—of one or more joints in the pelvis and lumbar region.

Why orthopaedic surgeons experience "far too many failures" after manipulation is due largely to their faulty technique. In the vast majority of cases a forced manipulation, with the patient under an anaesthetic, is given by an orthopaedic surgeon, and the patient is then handed over to the care of a masseuse for subsequent treatment. Orthopaedic surgeons learn their manipulative technique on anaesthetized patients, when the whole question of active joint strain and protective spasm of muscles and ligaments is eliminated by the anaesthetic. Little or no effort is made really to understand the mechanical problem of each individual patient and which particular joint is mainly or primarily on strain. I have treated many hundreds of cases of sciatica by osteopathic manipulation with a very high percentage of pleasing results, both with and without anaesthesia. Practically never, however, have I succeeded in entirely curing any case of sciatica after one manipulation under anaesthesia. In the cases where I have resorted to anaesthesia it has always been necessary to continue manipulation, without an anaesthetic, for a varying period of time afterwards, until the tension in the joint and the protective spasm of the muscles and ligaments are entirely eliminated, and the patient's faulty posture is corrected; this necessary result cannot be attained by one manipulation under anaesthesia. I have only resorted to anaesthetics in cases where there has been some psychological necessity on account of the fear of pain, the extreme protective spasm of the lumbar muscles making it entirely impossible to obtain any movement whatever without an anaesthetic, or possibly in some cases on account of the possible saving of time.

I seriously put forward this criticism of orthopaedic surgeons' technique as the real reason why they get such a high percentage of failures from manipulation, and nowadays are so prone to remove an intervertebral disk instead, and I suggest that if they elaborated their manipulative technique along the lines I have indicated they would get better results and find less necessity for resorting to serious surgical intervention. Perhaps they prefer surgery.—I am, etc.,

London, W.1. GEORGE MACDONALD.

Treatment of Sciatica

SIR,—Sir Arthur Hurst raises some interesting points in the *Journal* of Dec. 18 (p. 773). In the course of over 15 years' experience in an electrotherapeutic department a large number of these cases have passed through my hands. During my first few years I found that very variable results were obtained in these cases, whereas a much quicker and more consistent response to treatment was obtained in cases of brachial neuritis. This called for careful thought, and I came to the conclusion that the essential features responsible for the good results in the latter group were: (1) The arm is kept in a sling until the pain has diminished considerably. (2) The diathermy or short-wave current is passed through the entire upper extremities, and including particularly the cervical plexus in its path. On a number of occasions when patients have not been responding well I have found that the assistant has not placed the upper pad (or condenser) sufficiently high to include the cervical plexus in the path of the current; when this has been corrected all these cases improved rapidly. This convinced me that the origin of the condition was situated in the region of the roots of the nerves.

On attempting to apply these principles to cases of sciatica certain difficulties were encountered. It is not possible "to put a leg in a sling," and during the acute stage I found that the exertion of moving from a car to the treatment room more than counteracted the beneficial effect of any form of physiotherapy. For this reason I advise complete rest in bed during this stage. Until 1934 these cases were treated by diathermy, and particularly in thick subjects it was not possible to obtain an effective concentration of the current through the lumbar plexus. With the introduction of short-wave therapy and the adoption of the Schliephake three-condenser technique it became possible to include the entire course of the sciatic nerve in the tract irradiated, and a marked improvement in our results was obtained.

Sir Arthur states: "The few patients who do not get well after a month of complete rest in bed are among those who give a history and show physical signs of root pressure. A further period of complete rest may still lead to recovery, but if there has been little or no improvement they should be referred without further delay to a neurosurgeon, who will cure them by removal of the herniated intervertebral disk." The great majority of our cases do not come to the department until they have had several weeks' rest in bed and are still complaining of considerable pain and disability. At this stage short-wave therapy is given daily for two weeks, and at the end of this period a marked improvement is seen in their condition; treatment is usually continued three times a week for a further two weeks if necessary, but a number of cases are completely cured in two weeks. As soon as the acute phase has passed, massage and exercises are given. If it is possible to admit the patient to hospital, treatment may be started at an earlier stage.

These observations support Sir Arthur's view that the pain frequently arises in the roots of the sciatic nerve, and suggest strongly that neurosurgical procedures are not indicated in the great majority of these cases until there has been a period of rest followed by a course of short-wave therapy.—I am, etc.,

Ipswich. C. H. C. DALTON.

Shock Treatment of Mental Disorder

SIR,—Dr. Winnicott's provocative letter will probably bring many replies from psychiatrists who have obtained good and lasting results from shock therapy. It is now possible to employ a criterion on results obtained in those cases remaining well some years following discharge from mental hospitals. In spite of some conflicting statements these results appear to justify the validity of individual experiences.

After four years' experience of all modern methods of shock therapy employed in mental hospitals, I am convinced of its value in carefully selected cases. I might add that

these four years follow twenty years of psycho-analytical work. The value of insulin shock in schizophrenia appears to me to be largely due to the greater facilities for employing psychotherapy during the actual treatment. This led me to favour the intramuscular injection of triazol, azoman, etc. The latter technique allows an interval for psychotherapy before the convulsions. The more or less acute anxiety occurring during this period is generally of a regressive type, and if desired can be used as a method of forcing a transference situation. The good results following electric shock therapy employed in involutional melancholia speak for themselves.

I believe that shock therapy combined with psychotherapy offers a new and promising approach in the treatment of the psychoses, and until a less drastic approach is discovered its condemnation is unjustifiable.—I am, etc.,

Dartford. ROBERT M. RIGGALL.

SIR,—Although I am a psychiatrist and psychotherapist who does not personally give electric convulsive therapy, I cannot let Dr. Winnicott's letter on this subject pass unchallenged.

First, I should like to know what evidence Dr. Winnicott has for saying that a patient who consents to this treatment is doing it out of an impulse akin to a suicidal one. Having seen many patients who have consented to, or even asked for, this treatment I myself can produce no similar evidence. Secondly, it is surely fanciful to suggest that one orders it as a punishment to the patient for not getting well. On the contrary, the physician who insists that the patient shall get well by the treatment which he himself is able to administer or not at all is actually punishing the patient much more severely!

Psychotherapy is as yet far too immature a science for its exponents to say dogmatically that it is the answer to every psychiatric illness. One has seen far too many cases going on for month after month, and even year after year, with psychological treatment which is doing no good whatever. To find a treatment that in suitable cases offers speedy and sure help to these unfortunate people is one of the greatest advances which medicine has made, and it would be a thousand pities if any part of the profession was prejudiced against it, either on the score that it is delaying a knowledge of psychopathology or on the score of dogmatic and unproved psychological assertions.

Dr. Winnicott does not seem clear that the choice of treatment in psychiatric illness must, as in other branches of medicine, depend upon diagnosis, or that there are certain forms of illness—such as anxiety neurosis—for which, other things being equal, psychotherapy is the method of choice; and others—notably involutional depression—where psychotherapy is useless and electric convulsive therapy is 80% effective. If he has not read Sargant's and Sands's work on the latter I am sure he would find it of interest. It is a patent misconception to suppose either that the two methods of treatment are interchangeable or that the one is a "short cut" to the other.

Finally, is it ethical to refuse any patient the appropriate treatment for his illness because to do so might advance our knowledge of pathology?—I am, etc.,

London, W.1. MARION GREAVES.

Teaching of Anaesthetics

SIR,—I am sure all teaching anaesthetists will agree most heartily with the points raised by Dr. K. G. Lloyd-Williams (Dec. 25, p. 827) with reference to the instruction of medical students. For many years newly qualified practitioners have complained with some bitterness that the methods of anaesthetic administration employed in hospital practice are too complicated for use outside. Now that specialist anaesthetists are in short supply the position has become acute, and the ignorance displayed by the average house-surgeon regarding the elementary principles of anaesthesia is truly amazing—not to say terrifying! In the various E.M.S. hospitals which have sprung up all over the country many anaesthetics have to be administered by residents (and others) who have had no special training in anaesthesia, and their well-meant but hair-raising attempts to produce scientific asphyxia are a continual source of worry to the visiting surgeons.

No useful purpose will be served by blaming the honorary anaesthetists at the teaching hospitals, most of whom do their best for patient, surgeon, and student, often under very trying conditions. It has long become evident, however, that modern anaesthesia is a highly specialized subject which cannot possibly be taught to medical students in the short time available. Furthermore, as Dr. Lloyd-Williams points out, the main operating theatre, with its list of gastrectomies, thyroids, and gall-bladders (not to mention exacting and temperamental surgeons), is no place for the beginner in anaesthesia, and the sooner this is realized by the academic and hospital authorities the sooner will a satisfactory solution be arrived at.

The present system, whereby the student goes the round of various operating theatres, picking up indiscriminate information as he goes along, is confusing and unsatisfactory for many reasons. For one thing, not all honorary anaesthetists are good teachers. Would it not be far more satisfactory for each hospital or medical school to appoint an anaesthetic tutor, who would be responsible for teaching students the cardinal principles of anaesthesia in the same way that the surgical registrar instructs the dressers in the elementary principles of surgical asepsis, case-taking, and the like? Under his supervision anaesthetic clerks would spend the first part of their course (say, two weeks) learning: (1) clinical signs and symptoms of the various stages of anaesthesia; (2) how to maintain a free airway; (3) the recognition of normal and abnormal respiration; and (4) how to administer a simple routine "open" anaesthetic. With the co-operation of the R.S.O. special lists could be arranged of relatively minor operations, so that each student would gain practical experience of the right kind. The third week could be devoted to giving short anaesthetics with nitrous oxide or intravenous drugs in the casualty, dental, and maternity departments, while the fourth and final week might be used for purposes of revision. At the end of the course each student should undergo a practical test by the senior honorary anaesthetist or lecturer, and any student falling below a certain standard would be compelled to take a further two-weeks course.

Where do the honorary anaesthetists come into the foregoing scheme? In my opinion the most useful plan would be for each honorary to give one demonstration in some special method of anaesthesia at the end of the ordinary course—e.g., basal anaesthesia with nitrous oxide and oxygen for toxic thyroid cases, cyclopropane–oxygen with carbon dioxide absorption and "controlled" respiration for thoracic surgery, spinal and regional analgesia, and so on. This would enable the student to appreciate the advantages of modern technique without being expected to take any active part in it. If any particular student wished to learn more about modern methods he would naturally take a postgraduate course in anaesthesia after qualifying.

The appointment of an anaesthetic tutor would lead to all sorts of advantageous possibilities from the point of view of the hospital. As in the case of resident surgical officers or registrars he should be a young man at the beginning of his professional career, preferably with not less than twelve months' experience as resident anaesthetist. In addition to teaching students he would be responsible for training and supervising the residents, and might also undertake difficult emergencies or assist in the special departments. Last, but decidedly not least, he could be responsible for keeping the hospital records up to date.—I am, etc.,

Newcastle-upon-Tyne. PHILIP AYRE.

Cerebral Malaria

SIR,—I beg space to add a postscript to Surg. Lieut. I. B. Sneddon's article (Dec. 25, p. 814). I write as one with fourteen years' experience of tropical work in Malaya and two in West Africa. In Malaya my partners and I were responsible for the health of some 80,000 Asiatic workers on rubber estates and tin mines, as well as a great number of Europeans. Cerebral malaria was relatively common, the Malayan strain of the subtertian parasite being, in my experience, infinitely more virulent in this respect than the West African. We lost very few cases indeed—not one being a European—in all those years, and the reason was, I am sure,

that we did not spare the quinine. Adult cases were given two, and sometimes three, intramuscular injections of 15 gr. of quinine daily. These were given into the upper and outer quadrant of the buttock. I have never seen any untoward effects from this dosage, nor have I ever had a quinine abscess of the buttock, even after repeated injections, as a sequela. Usually two or three injections suffice, but if vomiting or coma persists the injections have to be continued until these signs disappear.

My top score for any one case was the rather amazing number of 14 injections of 15 gr. each, spread over seven days, and the patient, one of my Indian assistant surgeons, made an excellent recovery, and was extraordinarily grateful for the cure, particularly as he himself had lost a case of cerebral malaria—his European estate manager—two months previously. This manager had refused to take quinine in sufficient dosage, either by mouth or by injection, as he averred that he only had a "headache" and he saw no reason why the assistant surgeon should fill him up with quinine when aspirin was the thing for a headache. He became comatose and died on his 90-mile journey down from the Ulu to hospital.

The moral is—and here I agree most heartily with Dr. Minett of the Gold Coast, who wrote in the same strain a few weeks ago—that one must take extremely energetic steps with any case of malaria, particularly subtertian, that suffers from a really severe headache or that appears to be semi- or fully comatose.

In contradiction to Lieut. Sneddon's statement that one usually finds a large number of parasites in the circulating blood in comatose cases, my experience has been the opposite, and some of my worst cases have shown only one or two parasites in a complete thin film. On the other hand, I have seen parasites in one field so numerous as to be almost uncountable, and yet the patient never showed any signs of the cerebral condition.

Give your quinine in ample doses—30 to 45 gr. daily—by injection, whether intravenously or intramuscularly I care not; though personally I found it more convenient to give by the intramuscular route. The bogy of quinine abscesses need not arise if one is certain of the sterility of syringe and quinine solution, and if one ensures that the injection is intramuscular and not merely into the subcutaneous fat of the buttock. I have always used ampoules containing 15 gr. of quinine bihydrochloride in 2 c.cm. of water, and, it is almost unnecessary to state, boiled syringe and needle before each injection.

If the many doctors, both at home and abroad, who are coming up against malaria for the first time and who regard it as a rarity, would stop "dabbling with 7½ gr. of quinine at a time and then waiting to see what the effect is," and give instead at least 30 gr. daily, we would have to record far far fewer of these sad cases of fatal malaria—sad because useful lives are thrown away that might have been saved.—I am, etc.,

I. G. CAMERON,
Major, R.A.M.C.
Medical Specialist (Tropical).

SIR,—In 1937 I had a rather similar case of cerebral malaria, with blood, etc., in the urine, to that reported by Dr. Sneddon (Dec. 25, p. 814). I was a resident in Manchester Royal Infirmary at the time. The patient was the soldier son of my wife's landlady. He had just come home on leave from Palestine, and was apparently in the pink of condition. (It was the time of the intensified disturbances in Palestine.) I had been introduced to the boy on his arrival home, and when I heard that he was dangerously ill with acute nephritis and delirium I was puzzled. I presumed on the family doctor's courtesy and took a blood slide, for it occurred to me that the patient might conceivably be the victim of malignant malaria.

It was fortunate in this instance that I had overstepped my position, for the slide (which I still have) showed numerous crescents (both male and female) of malignant malaria—i.e., *Plasmodium falciparum*. After informing his doctor it was arranged that the patient should be admitted to Manchester Royal Infirmary, where, if memory is correct, he was treated with quinine and plasmoquin. After a sharp illness the man subsequently recovered and was discharged some weeks later.—I am, etc.,

Conon Bridge. KENNETH I. E. MACLEOD.

Population Problems of India

SIR,—It is surprising to see put forward in all seriousness in a scientific journal the dismal and long-discredited theories of the reactionary parson Malthus, which have long been laughed at by scientists and economists of all schools. Prof. Blacklock does not suggest in his article on the population problem of India (Dec. 25, p. 805) that the present terrible famine in India is due to over-population, but there is as much justification in arguing this as in visualizing future famines in India due to over-population. "Where is the Indian Malthus who will inveigh against the devastating torrent of Indian children?" asks a leading economist.[1] And another,[2] "India seems to illustrate the theories of Malthus." Let us examine the arguments of this new "Indian Malthus."

He puts forward assumptions based on the presumed application of the principles of the Atlantic Charter to India, but have we not already been informed by Mr. Churchill that the Atlantic Charter does *not* apply to India? Some 247 persons per square mile seems a great density of population until we compare it with that of England and Wales, which in 1931 was 685 persons per square mile. Further, while India's population between 1881 and 1931 increased by almost 40%, that of England and Wales increased in the same period by almost 60%—that is, by half as much again.

Considering the problem of food production, the solving of which is the key to India's future, we find that in four years in Great Britain the amount of food produced was doubled (1939-43)—that is, we now produce two-thirds of our food instead of one-third, as we did before the war. Many agricultural experts assert that we are quite capable of producing all our food requirements in Britain. Let us now consider India. The following quotation[3] refers to Bengal, the most densely populated part of India: ". . . Of the total area cultivable only 67% is now actually under cultivation. If the total cultivable area were brought under cultivation, and if improved methods of cultivation yielding an increase of 30% over the present yield were adopted, it is clear from a simple rule-of-three calculation that Bengal could support at its present standard of living a population very nearly twice as large as that recorded in 1931." One can add that if it is humanly possible to multiply food production by three in Britain, it cannot be impossible in Bengal.

Instead of homilies about restraint and birth control I would suggest that British medical men interested in the future of India should advocate the application of the Atlantic Charter principles to India, which would give her the right to self-government—a necessary preliminary to improvement in the food situation or anything else.—I am, etc.,

Nelson, Lancs. T. D. CULBERT.

REFERENCES

1 V. Anstey, *Economic Development of India*, p. 475.
2 L. C. A. Knowles, *The Economic Development of the British Overseas Empire*, p. 351.
3 *Benga Census Report*, 1931, **1**, 63.

SIR,—India's growing population has been blamed by the spokesmen of the British Government for the present famine and also for the poverty, ill-health, and low standard of life of the Indian masses. Prof. D. B. Blacklock's article is also written in the same vein. He may have meant well, but his references to the Atlantic Charter make your Indian readers and many others very suspicious.

India is not the only country with a rapidly increasing population. In fact she is far behind the big European countries in this respect, as the following figures show:

Increase in Population in 50 Years

Russia	73.9%
Holland	62.0%
Germany	59.0%
England	58.0%
India	18.9%

These figures show that the population problem should be considered more serious in this country than in India, especially when everyone knows that even with the most modern methods England cannot feed more than half of her population. Yet people here are being advised and encouraged to have more babies. Why? Because it is not only the land that counts but also the industrial production. Prof. Blacklock presupposes

that India will remain mainly an agricultural country, perhaps because the policy of British capitalists has been to keep India only a dumping ground for their goods. But India can be made a great industrial country.

The Indian problem cannot be solved by limiting the population alone, but by better education, better health and social services, modern methods of agriculture, and industrial development. Who can bring about these changes? As Prof. Blacklock rightly points out, this is the responsibility of Indians themselves. But have the Indians got sufficient power to bring about these changes? The answer is in a big NO. Only an independent Indian Government will have the power, the courage, and the resources necessary for such changes.

Prof. Blacklock tells us that out of 6,000 civilian doctors in India only 200 are British. But he does not tell us that these 200 have the real power. They control all the highly paid key posts and frame the policy. They derive their instructions from Whitehall. Only one example will prove it. Recently a Commission was appointed to report on reforms in the I.M.S. All its members were British, so was Mr. Souttar, its chairman. And India has dozens of medical men as capable as any member of the Commission.—I am, etc.,

Birmingham. D. R. PREM.

Hypoglycaemia

SIR,—Recent correspondence on this subject has indicated that spontaneous hypoglycaemia occurs rarely, and that it is suspected too frequently, and is "overdone as an explanation for minor indispositions." It has also been pointed out that hypoglycaemia may be a concomitant of a number of disorders. It may be that the swing of the pendulum has gone too far, and a corrective to over-zealousness was well warranted. It is, however, not so many years ago since endogenous hypoglycaemia was entirely unsuspected—at least by the majority of physicians—as a cause of convulsions, or loss of consciousness, or peculiarities of behaviour; and publications of such cases in recent years still show that the diagnosis has often been missed by one or more physicians.

Although it is true that the diagnosis of endogenous hypoglycaemia is often invoked without sound evidence to explain minor indispositions, it is also true that fatal hypoglycaemic coma may occur in the course of three major endocrine disorders—namely, Addison's disease, Simmonds's cachexia (anterior pituitary deficiency), and adenoma or carcinoma of the islets of Langerhans in the pancreas. Addison's disease should, of course, be diagnosed on clinical evidence, and often is. Nevertheless, in the course of the disease a severe or fatal endogenous hypoglycaemic attack may occur, and its true nature remain unrecognized. This complication is more likely to occur when desoxycorticosterone therapy is used in preference to cortical extracts, which also contain the corticosterone carbohydrate regulating factor. (Nevertheless desoxycorticosterone is completely adequate therapy with some patients.) Simmonds's cachexia may be atypical in its manifestations, especially when following parturition, and the original disorder, as well as the incidental hypoglycaemia, may remain undetected. A pancreatic islet tumour may well be unsuspected because of its rarity. If the diagnosis of Addison's or Simmonds's disease is made, adrenal cortical extracts will tend to prevent hypoglycaemic attacks; and the latter will be more specifically guarded against when the pure corticosterone factor becomes available commercially. If a pancreatic islet tumour is diagnosed, laparotomy and removal are indicated.

These few comments in no way detract from the validity and value of the observations made by previous correspondents on this subject, but serve, I venture to hope, to stress another aspect which is not unimportant.—I am, etc.,

London, W.1. S. L. SIMPSON.

Obstetric "Shock" or Haemorrhage?

SIR,—We have read with interest the short article on blood transfusion in "obstetric shock" (Dec. 18, p. 781), and the subsequent correspondence. From this four points emerge for discussion. First, the use of the term "obstetric shock"; secondly, the beneficial effect of transfusion in conditions so described; thirdly, the complete absence of haemoglobin estimations throughout the whole series of cases quoted; and, fourthly, the persistent statement that haemorrhage had not been excessive. We have had a very extensive experience of transfusion in such cases, and the obstetrician has always made the diagnosis of "obstetric shock" and amplified it by the statement that haemorrhage had not been excessive. Haemoglobin estimations have always been made by us before and after treatment, and treatment has always consisted of much more massive transfusion than any of your correspondents have described. The haemoglobin percentage may or may not have been below normal before transfusion was started, but it has never been above normal during the three days after transfusion, and has frequently been as low as 70%. The minimum volume transfused has been three pints of citrated blood, and the majority of such patients have received five to seven pints of blood. Before transfusion the pulse rate has been raised, 170 to 140 per minute, but has fallen as transfusion proceeded. Where retained placenta has been the cause of the so-called "shock," removal of this organ has been successfully accomplished after transfusion, no matter how severely ill the patient may have been, and the conclusions that we have arrived at are either that severe anaemia is the precursor of the retained placenta and obstetric shock or that severe haemorrhage has always occurred in our cases of "obstetric shock," haemorrhage being much the more likely diagnosis.

We cannot imagine how any patient can accommodate within the circulation five pints of blood, often transfused at an extremely rapid rate—two pints during the first quarter of an hour and a further two pints in the next half-hour—if there has not been a corresponding loss of blood volume preceding the transfusion. If the space available for this transfused fluid is due to dilatation of the vascular bed rather than loss of fluid, then transfusion of whole blood should raise the haemoglobin to a level of 150% or thereabouts when the patient has recovered. We firmly believe that the use of the term "obstetric shock" should be abandoned; all cases that we have seen have been due to blood loss as judged by comparison of the haemoglobin levels before and after transfusion of whole blood, and this in spite of the fact that obstetricians generally say that blood loss has not been excessive. In the great majority of cases the obstetrician has not been present throughout the course of labour to see for himself what has taken place, but it is easy to convince oneself of the correctness of our contention if haemoglobin estimations are made in all such cases before and after transfusion.

Only when the term "obstetric shock" is abandoned in favour of the term "obstetric haemorrhage" will the treatment necessary in these cases be recognized and applied. In support of this contention we would quote one case of complete inversion of the uterus. After replacing the uterus this patient received fourteen pints of citrated blood, and within thirty-six hours had a normal pulse rate, 100% haemoglobin, and thereafter a normal puerperium.—We are, etc.,

J. MILLS.
P. KIDD.
Pathological Laboratory, Royal Berkshire Hospital. L. DOWSETT.

Treatment of Gonorrhoea in the Female

SIR,—The excellent summary of the modern treatment of gonorrhoea in the female by Brig. T. E. Osmond (Jan. 8, p. 51) has stimulated me to comment upon the local activity he recommends in labour and the pyrexial puerperium.

Instead of his recommendation that when labour starts an endeavour should be made to cleanse the birth canal, I would advocate that only the vulva be kept as clean as possible, and that the aim should be to carry out no vaginal or rectal examination throughout labour, or even late in pregnancy. In managing the labour the abnormalities should be detected by other means than by vaginal or rectal examination. When operative intervention is judged to be necessary the cleaning of the vagina and performance of the internal examination are best made under the anaesthesia.

In the puerperium in these contaminated cases no condition except vaginal haemorrhage, severe or repeated, should provoke local intervention, even of as gentle a nature as the passage of an intra-uterine catheter and the instillation of glycerin as recommended by Brig. Osmond. The efficiency of this policy of intervening even less than in non-venereal cases has been confirmed over many years.—I am, etc.,

London, W.1. AMY M. FLEMING.

Scabies

SIR,—I should like to implement some of Dr. Mellanby's observations in his letter (Dec. 18, p. 795). First, regarding one-application treatment. The figures for the year 1943 are not yet complete, but a rough survey indicates that relapses are very infrequent—in fact, well below 1%. The following investigation carried out by the charge orderly at the treatment centre proves the efficacy of the one-treatment method. Eighty persons were chosen who on the first examination had live mites on the hands and/or wrists; 40 were treated with the lanette wax benzyl benzoate emulsion 20% and 40 with triethanolamine stearic acid B.B. preparation, also 20% B.B. A total of 974 mites were taken from the 80 patients following treatment—i.e., average of approximately 12 mites per case; all the mites on test were found to be dead. The times between treatment and the test of the mite being dead varied between a quarter to half an hour. In no case did more than half an hour elapse between treatment and test.

Another investigation carried out showed that home treatment is, generally speaking, a failure. It is known that sulphur ointment, benzyl benzoate, and demethyl-diphenylene disulphide (D.D.D.) are all efficient sarcopticides. Patients are questioned as to any treatment just before attendance at the centre; if any medicament other than those mentioned had been used the case was ignored. The patient's hands and wrists were carefully examined for mites; if no mite was found the case was ignored; if one live mite was found it was obvious that treatment had not been successful. A total of 347 patients had used one or more of the three above-mentioned medicaments; in 15 cases only were *all* dead mites found—a success rate of 4.31%.

With regard to reinfestation from fomites, I consider this plays a minor part in the spread, and from a local authority's point of view the disinfestation of the fomites would divert man-power and money for very minor results. For example, in the areas served by the Poolsbrook Treatment Centre, if disinfestation of clothing, bedding, etc., were carried out it would mean the employment of an extra driver and van doing a mileage of 30,000 annually. In addition an extra man would be required to attend to the disinfector, etc.—a bill of roughly £490 per annum in wages and £750 in running costs of a van. This does not include cost of fuel and "wear and tear" of the disinfector. This sum would represent over a penny rate for the authorities concerned for a reduction of 1 to 2% at the most in the reinfestation due to fomites.

To combat scabies successfully there should be a really well-trained and skilled staff at the treatment centre or cleansing station; and success of the treatment will be limited unless whole families attend. Our figures show that, irrespective of the size of the family, if scabies gains an entrance to the household 80% of the members are infected. In fact the household group is not a sufficiently large unit to aim at for attention; in many instances the "yard," "court," or block of houses should be the unit for examination.—I am, etc.,

JOHN R. GRAHAM,
Medical Officer of Health, Chesterfield.

Infective Hepatitis

SIR,—Dr. I. Gordon's excellent and comprehensive study of epidemic non-spirochaetal jaundice (Dec. 25, p. 807) raises again the problem of the nature of jaundice. The main difficulty is to decide whether we are to consider the ordinary case of jaundice, familiar to every practitioner, as a sporadic form of infective hepatitis or as a different type of jaundice with different aetiology.

Since Eppinger (*Die hepato-lienalen Erkrankungen*, Vienna, 1920) discovered for the first time inflammatory and degenerative changes in the liver of a young girl who committed suicide while suffering from "simple" jaundice, the view that simple "catarrhal" jaundice was due to a hepatitis has been generally accepted abroad, and Virchow's conception of jaundice as being caused by an obstruction due to a swelling of Vater's papilla or to the formation of a mucous plug in the common bile duct was more or less abandoned. Impaired galactose tolerance, which could frequently be demonstrated in such cases, favoured the assumption of a primary lesion of the liver parenchyma.

Hurst and Simpson (*Guy's Hosp. Rep.*, 1934, **84**, 173), however, still maintained that true "catarrhal" jaundice was caused by an obstruction of the common bile duct, and could be differentiated clinically from jaundice produced by a "primary hepatic necrosis," a condition obviously identical with what is now commonly called hepatitis. Findlay (*J. R.A.M.C.*, 1940, **74**, 72), though recognizing two different types, believes that differentiation on clinical grounds is not possible, and Dr. Gordon's series of cases proves that the clinical features of epidemic hepatitis may be indistinguishable from those of any other type of jaundice.

Although there is conclusive evidence of hepatitis in cases of so-called catarrhal jaundice, and though signs and symptoms of the latter condition and of infective hepatitis can be identical, it seems to be premature to regard every case of jaundice as a case of epidemic infective hepatitis before the causative agent has been discovered and can be demonstrated in every case of icterus. On the other hand, there is anatomical pathological evidence for the assumption that more than one factor plays a part in causing jaundice. A differentiation of cases of icterus can be made with the Takata reaction, especially by the modification which I described in 1936 (*Guy's Hosp. Rep.*, **86**, 166) and which has been used successfully by many authors (cf. Ucko, *J. Lab. clin. Med.*, 1942, **28**, 17). This very simple test gives negative results in the majority of cases of "simple" jaundice, and more or less strongly positive results in some cases without distinguishable clinical features. As the test indicates a disturbance of the protein metabolism in relation to the liver function, it can be concluded that this function of the liver is disturbed only in a certain number of cases of jaundice. The results of the test point therefore to the existence either of two different types of jaundice or of cases with and without impairment of the protein-regulating function of the liver. If employed more regularly, and possibly combined with other function tests and with biopsy experiments, it is likely to throw more light on the aetiology and the nature of icterus simplex.—I am, etc.,

London, W.1. H. UCKO.

Transportation of Fractured Femur

SIR,—The article by Lieut.-Col. Wood Power in the *Journal* of Oct. 23, 1943, was of great interest to all concerned with surgery in the forward area. He described and criticized a type of "Tobruk" plaster for fractured femur that has been largely superseded by a variation which doubtless my surgical colleagues will describe when further experience has enabled them correctly to assess its value. It has been used by many surgeons for the last 18 months, but not under the rigorous conditions described by Lieut.-Col. Wood Power. He had to rely on single-track railways for the evacuation of his casualties. Whether this improved "Tobruk" would have been successful but for that magnificent double-track railway that linked the Wadi Zemzen with Benghazi, or the all-electric line between El Hamma and Tripoli, is open to doubt.—I am, etc.,

R. BINNING,
Major, R.A.M.C.

Urine and Blood Urea under Sulphonamides

SIR,—I wish to record this case in order to emphasize the importance of quantitative analysis of the urine and blood urea estimation when sulphonamide drugs are given to patients on low diet.

A man aged 42 was admitted to the Royal Gwent Hospital suffering from a prepyloric ulcer of 20 years' standing, and for which he had undergone several courses of medical treatment. On Nov. 25, 1943, I performed a partial gastrectomy. He received two pints of plasma on his return to the ward and his condition appeared to be satisfactory. On Nov. 29 he complained of pain in the right side of his chest; his temperature was 101° F., and his leucocyte count was 13,000. An early pneumonia was suspected, and he was given four tablets of sulphathiazole, followed by two tablets every four hours with 1 drachm of sod. bicarb. His temperature returned to normal and there was no vomiting, but his general condition deteriorated. His fluid intake and urinary output were said to be satisfactory but were not measured.

On Dec. 2—i.e., seven days after the operation—I was told that his urinary output had ceased. He looked very ill, and his blood urea was found to be 312 mg. per 100 c.cm. He had received 29 tablets—i.e., 14½ g. of sulphathiazole. This was stopped immediately,

and he was given one pint of sod. sulph. 4.25% and two pints of 5% dextrose saline intravenously. This was followed by two pints of plasma and one pint of blood. During the course of the next few days his urinary output and blood urea returned to normal. He recovered, and has since been discharged from hospital.

In my opinion the kidney dysfunction was due to the administration of sulphathiazole when the patient was on low diet, and would probably have been avoided by the administration of more intravenous saline, etc.,—I am, etc.,

Newport, Mon. J. T. RICE EDWARDS.

Examining the Neurotic

SIR,—I trust these comments on the letter from Major Stungo and Captain Charlton (Dec. 25, p. 830), referring to the paper by Stephenson and Cameron, may be of interest.

It is important, particularly in dealing with large numbers of neurotics in a more or less summary fashion, to avoid being doctrinaire, and, with an open mind to the circumstances of each patient, to bring the force of all available facilities to bear on the condition. Physical investigation is one of the least time-consuming and most commonly available of psychotherapeutic facilities. Many patients have ideas about medical investigation and treatment, and that is one of the circumstances to be borne in mind. The dull and backward, for example, if they have not arrived at the stage of hopeless acceptance of symptoms, may have the desire for investigations, commonly attributed to pre-war Harley Street clientele, and with such a patient—who has, shall we say, had a head injury a year previously, with subsequent headaches, and who is anxious to have some investigations done—the most immediately effective measure may be to say to him, "All right, we will have your skull *x*-rayed in the morning." The would-be enlightened, on the other hand, may consider that psycho-analysis is what he stands in need of, and if we can say to him, "All right, we will have you psycho-analysed in the morning," I am sure it would be a great help. Avoidance of special physical investigations may be interpreted by one patient as a sign of confidence on the part of the psychiatrist, and by another as a continuation of the neglect to which he considers he has been for too long subjected. To undertake a physical investigation may be an indication that the psychiatrist is prepared to accommodate to the patient's attitude, and this reason I regard both as more effective and more scientific than the orthodox reason of physical examinations and investigations being done for the sake of impressing the patient.

In general, how a thing is done or not done may be more important to the neurotic than what is done or is not done, and there is room for differing practices in this field. It may be that the evils of over-investigations are on the wane and may not require much further emphasis. We are not so rich in effective therapeutic measures that we can ignore help from any quarter.. The remark that "neurotic dyspepsia should be identified by means of positive psychiatric criteria and not by the negative findings of gastric investigations" is, I am sure, commonplace, but, in addition to the therapeutic value, physical investigations may also be helpful in assessing the degree of somatic dysfunction present and diagnosing or excluding conditions which commonly keep company with anxiety states but are best treated by other than psychological means, should there be sufficient indications that such a condition may be present.

With regard to dyspepsia, the prevalent assumption among medical men appears to be that there are many cases radiologically not showing ulcers which give indications of both a morbid mental attitude to alimentary functions and a disorder of these functions themselves, and if a psychiatrist is fortunate enough to have the help of a physician with experience in the diagnosis and perhaps in the treatment of these conditions along re-educative lines by dietetic means he should certainly take advantage of it, and whether the usual procedure of the patient being seen first by a physician is followed or not would seem to be a matter of administrative convenience and personal preference.

The report by Stephenson and Cameron of the typical course of anxiety states occurring in Service conditions, with the clear account of the three stages that these patients may pass through, is surely most valuable, and to describe the changing course of a neurotic illness is a contribution of more special interest than would be indicated in the term "the reiteration of symptoms alone." I have no doubt that Stephenson and Cameron fully appreciate that if they were able, by choosing necessarily smaller groups, to give an account of very similar findings in the course of the illness, with personality findings showing striking similarities in the patients within each group, that would be still better, but the two factors which make that very difficult are the time-consuming nature of personality investigations, with the very unusual experience and skill required, and the great diversity of individual personalities. Even if patients are selected in whom similarities in personality make-up are to be expected—such as cases of conversion hysteria or effort syndrome—a psychiatrist, albeit gifted with some imagination, may search long enough before he finds two patients with strikingly similar personalities; and if you collect half a dozen that give that impression, the likelihood is that three or four may stand the test of expert investigation and the others be a bit weak in respect of their adherence to the standard personality of the group. A further difficulty is that people of very different personality make-up may react to stress in a superficially similar manner. I appreciate, however, that in patients of similar symptomatology some traits will be revealed with significant frequency on a personality assessment. I agree that the structure of the personality will be the diagnostic criterion of the future, and do not wish to fall into the same error as Stungo and Charlton in being over-critical of contributions of one sort in emphasizing the importance of an approach of complementary value.

One further point. Stungo and Charlton ask us "to correlate personality types with the relevant anxiety reaction," and in the course of their letter they give a result of their methods of such correlation in the composite assumption that dull, highly suggestible patients are prone to exhibit neurotic dyspepsia. But this assumption implies that they have satisfied themselves on a number of difficult points—e.g., that dull patients are uncommonly suggestible; that dull patients are uncommonly prone to neurotic dyspepsia; and that it is the more suggestible of the dull who are so prone. Further, if these patients have the general attribute of high suggestibility, why should their imitation of symptoms be permanent, as is suggested?—I am, etc.,

Dudley. W. M. MCINTYRE.

Inhaler for Trilene Analgesia

SIR,—Dr. W. Edwards (Dec. 18, p. 795) states that a trichlorethylene–air mixture is an excellent analgesic for childbirth, and he refers to the single bottle of Marrett's apparatus which he used for this purpose as "Martha, the mechanical midwife." I must point out that this apparatus is designed for employing trilene or ether for analgesia and anaesthesia, and, as such, it should only be used by qualified practitioners. The lever on the bottle can be moved to increase the strength of vapour admitted to the patient, and the bottle must be kept upright to prevent trilene from entering the air-tube.

It was because I was satisfied that trilene–air analgesia was superior to the nitrous oxide–air technique that, with the help of Mr. A. Charles King, I designed a special inhaler. This embodied modifications which, I believe, satisfy the requirements of inhalation analgesia for childbirth and permit it to be employed with safety by a midwife. The salient features of this inhaler are: (1) the strength of the mixture cannot be increased to anaesthetic potency; (2) the liquid cannot enter the air-tube; (3) the patient administers the mixture to herself; (4) the sound made by the movement of the valves enables the person in attendance to follow the behaviour of the patient without direct supervision of the administration. An account of this inhaler with the results of its use since Nov., 1942, was published in the *Lancet* of Dec. 4, 1943.—I am, etc.,

London, N.16. A. FREEDMAN.

Babies in Hospital

SIR,—I shall have to take the risk of being considered likely to hold very out-of-date views if I confess to nearly 30 years of medical work among infants in children's hospitals, child welfare clinics, and private practice, but two recent medical memoranda in the *Journal* have braced me to face the risk.

The memoranda to which I wish to draw attention appeared in the *Journal* of Dec. 25, 1943, and Jan. 8, 1944, under the titles "Suppurative Mastoiditis in an Infant" and "Staphylococcal Pyopneumothorax in an Infant: Recovery." Those two articles, which are deserving of careful study by all interested in the welfare of infants, to my mind show very clearly that hospital wards can be very dangerous places in which to treat infants, while they also show that, when babies have been brought to death's door, we have in modern treatment very efficient methods for life-saving.

In both cases, from the very full notes given, it appears to me that at the time the infant was admitted to the hospital ward there was nothing in the infant's medical condition to justify this step. Could not all the necessary investigations have been carried out in a well-run out-patient department? Are not the major catastrophes described—the suppurative mastoiditis and the staphylococcal pyopneumothorax—the direct result of hospitalization? Hospital ward work in the case of young infants is carried on under crippling handicaps. Do those most closely concerned always realize that these handicaps exist? Many child welfare medical officers and health visitors, dealing as they do with very large numbers of infants of all types and thereby gaining a wide experience, have come to dread the necessity for hospitalization when the need does arise.—I am, etc.,

Nailsworth. MARGARET DUNSTAN.

R.M.B.F. Christmas Gifts

SIR,—It is with great pleasure that I inform you that we were able to give £3 to each of our regular beneficiaries at Christmas, which amounted to £1,566, and in addition to distribute £2 on New Year's Day as "a special surprise" to 50 of our poorest folk, the total distribution of gifts being £1,666. These figures cannot reveal the amount of happiness and good cheer brought to 522 homes, but it can surely be imagined, and the gratitude of many is very touching. Please convey to your readers my heartfelt thanks for their most generous response and support of my appeal. I am deeply grateful to all.

Many may see from this Christmas gift distribution what great and useful work the Royal Medical Benevolent Fund is doing throughout each month of the year. Will those who do not already subscribe to our general funds not forget our work in 1944?—I am, etc.,

THOS. BARLOW,
1, Balliol House, Manor Fields, Putney, S.W.15. President, R.M.B.F.

Obituary

JOHN ALLAN CRAIGIE MACEWEN, M.B., C.M., F.R.F.P.S.

Mr. John A. C. Macewen died at 3, Woodside Crescent, Glasgow, on Jan. 12. The eldest son of the late Sir William Macewen, he was educated at the University of Glasgow. He took the B.Sc. with honours in anatomy and physiology in 1895, the M.B., C.M. with honours in 1897, and jointly gained the Brunton Memorial Prize awarded to the most distinguished graduate of the year. After a period spent abroad, studying the operative procedures and surgical technique of some of the most distinguished surgeons on the Continent, he became house-physician to Sir Thomas McCall Anderson and house-surgeon to Sir William Macewen in the Western Infirmary, Glasgow.

At the outbreak of the South African War in 1900 Mr. Macewen volunteered for service with the armed Forces, and served as civil surgeon to the British Army in South Africa. On return to this country he threw himself whole-heartedly into the teaching of surgery, which was to become the outstanding feature of his professional career. For nearly a quarter of a century he acted as university assistant—first junior and later senior—to his father, the regius professor of surgery at the University and Western Infirmary, Glasgow. He was also dispensary surgeon to the Glasgow Royal Infirmary, assistant surgeon to the Princess Louise Hospital, Roseneath, and surgeon to the Elder Hospital, Govan.

In the war of 1914–18 Mr. Macewen, in addition to his other duties, served, with the rank of captain, R.A.M.C.(T.), as surgeon in No. 4 General Hospital, Stobhill, Glasgow; consulting and operating surgeon to several Scottish Naval hospitals; and honorary consulting surgeon to the Princess Louise Scottish Hospital for Limbless Sailors and Soldiers, Erskine—tasks which occupied every hour of the day and often much of the night. During the German advance in 1918 Mr. Macewen was transferred to France, where he worked in the military hospitals at Etaples. He used to describe the ghastly results of enemy bombing of wards full of sick and wounded, which took place nearly every night, necessitating the resumption of work in the operating theatres as soon as the raids were over to deal with the newly created casualties. The heroism displayed by the staff on those occasions, and particularly by the nurses, left an indelible impression on his memory.

In later years Mr. Macewen became surgeon and, before he retired, senior surgeon to the Royal Infirmary. In 1924 he was appointed professor of surgery at St. Mungo's College, Glasgow—a post which he only recently relinquished on account of failing health. During a long professional life of unremitting toil he gained in full measure the confidence and affection of those shrewdest of judges—his patients, his nurses, and his students. Few surgeons can have done more operative work and fewer still have taught so many students. He was one of the most successful teachers that the Glasgow School of Surgery has ever produced. When the B.M.A. held its Annual Meeting in 1922 in Glasgow, with his father as President of the Association, Mr. Macewen held office as hon. secretary of the Section of Surgery.

WALTER M. FALLON, M.D.

Walter Martin Fallon, M.D., professor of medicine in University College, Galway, and senior physician to the Galway Central Hospital, died on Nov. 9 after an illness lasting over six months. Although he died in the early forties his perception of the difficulties of others was exceptional, and his excellent advice for their solution was always highly prized by colleagues, friends, and patients. M. G. A. L. writes:

Prof. Fallon lived a full life, crowding into his short years experience in general practice in Birmingham, study in London and on the Continent, until he finally settled in Galway as a consultant. His student days were cast in the troubled times in Ireland, but despite his many activities his course was brilliant and he enhanced his friendship with many who were foremost in the National movement and developed advanced political views which he held until he died. He entered U.C.G. in 1915 as a medical student and thenceforward scholarships and other honours fell thick upon him: he graduated B.Sc. in 1919 with first-class honours, transferred to University College, Dublin, where he obtained the M.B., B.Ch., B.A.O. in 1921, and then back to Galway, where he received the D.P.H. with first-class honours in 1922. He obtained the M.D. in 1925, and returned to his beloved Galway in 1929 as medical superintendent at the Central Hospital, and two years later was appointed to the chair of medicine in U.C.G.

Few could have more friends than he had, and he was always accessible to them, and his interests were as wide and as varied as this circle. In his profession he always kept abreast of the times—often ahead of them; he could claim to be one of the first in the British Isles to treat Addison's disease on modern principles. The best proof of all of his ability was that his professional colleagues sought his opinion on themselves, their relatives, and their other cases, and always held it in very great esteem. Consulting work, however, did not entirely satisfy him; his great interest was in the realm of preventive medicine. Almost alone he took an active part in the proper hospital treatment of pulmonary tuberculosis in Galway, and behind the scenes he was active in crystallizing public opinion in the antituberculosis drive, and left his sick-bed to attend one of the first meetings of the campaign. But these are not the activities which will enshrine his memory. As his students carried his coffin to the grave, and his colleagues in academic robes followed after, there were many more who mourned his passing. Unspoken of and unknown but to a very few, his charity had earned their sorrow. Some of the really poor realized only too well that in the passing of Prof. Fallon his surreptitious payment of the weekly rent and his shy gifts of food had also ceased for ever.

We regret to announce the death on Nov. 23, 1943, at Walton-on-Thames of Dr. JOHN MACMILLAN, D.S.O., *M.C.*, D.P.H., medical officer of health for Woolwich, at the age of 58. Dr. MacMillan was born in Glasgow and was educated at Glasgow High School before proceeding to Glasgow University. He graduated M.B., Ch.B. in 1908 and was for a short time in general practice before obtaining an appointment in the Glasgow Fever Service, after which he took up an engagement in London with the then Metropolitan Asylums Board. Before the last war he was senior assistant medical officer and school medical officer at Willesden. He joined the R.A.M.C., and became a lieut.-colonel and officer commanding 5th Field Ambulance in France. His services won him the M.C. and D.S.O. and the esteem of those who served under him. He was appointed M.O.H. to the Metropolitan Borough of Woolwich in June, 1919, and from that time Dr. MacMillan devoted himself to building up the health services in Woolwich. He was particularly interested in building and organizing new health centres and clinics, slum clearance and rehousing, disinfestation, and health propaganda. His reputation as an expert in disinfestation was appreciated in England and on the Continent. Two years before the outbreak of war he turned his attention to air-raid precautions and with characteristic thoroughness trained personnel and organized the casualty services, so that when war broke out Woolwich was prepared. As a consequence of overwork and strain his health broke down at the end of 1940, and he was forced to take a complete rest from work. He returned to duty before he was fit, and again his health broke down early in 1943. Among the many offices Dr. MacMillan held were those of chairman of the Woolwich Division, British Medical Association (1924–5), honorary secretary of the Division (since 1931), chairman of the council of the Royal Sanitary Institute (from October, 1942), and chairman of the Central Council for Health Education (1938–9). In a tribute paid to him by the leader of the Woolwich Borough Council it was said: "Medical officers of health since 1870 have played a great part in improving the health of the country, decreasing the death rate, and adding to the average expectation of life. Many of them deserve to have their names on a Roll of Honour, and on such a roll Dr. MacMillan's name would have had a very high place."

Dr. JOHN PEERE WILLIAMS-FREEMAN, J.P., who has died at Thruxton, near Andover, at the age of 85, had other claims to distinction beyond those of long service as a country general practitioner of real all-round excellence and of high principles and character. Educated at University College Hospital and at Newcastle-upon-Tyne, he became M.B. of Durham University in 1885 and M.D. in 1888; in 1886 he had qualified M.R.C.S. and L.S.A. Outside his professional work he made a name of great distinction for himself as an archaeologist—at Thruxton he was in a district peculiarly rich in vestiges of ancient man. An indefatigable worker and walker, there was no nook or cranny of Hampshire which he had not personally explored on foot, and few if any in Wiltshire. His magnum opus was his *Introduction to Field Archaeology*, in which he first laid down the principles of the science and then illustrated them by a conscientious review of every single ancient monument in the entire County of Southampton. This work, published more than 30 years ago, was soon recognized as a classic, and is so greatly valued that it has been for several years extremely hard to come by a copy. Here and there fuller information or further excavations led the author to modify some of his conclusions, and it has been understood for some years that he had in preparation a new and revised edition. Probably the war has interrupted publication; for the sake of a host of his friends and of his fellow archaeologists it may be hoped that his labours may see the light when the war is over. For several years after retirement he lived at Botley, in Hampshire, but returned to Thruxton and died there just a few days before Christmas. Dr. Williams-Freeman was an ardent member of the B.M.A., which he joined in 1887; and country doctors owed much to him for his indefatigable work on the Rural Practitioners Subcommittee of the Insurance Acts Committee between the years 1918 and 1926.

Surg. Lieut. J. Swift Joly writes: May I crave the space of your columns to add a few words to Dr. Cuthbert Dukes's excellent obituary of my father, the late J. SWIFT JOLY. To the younger generation my father will be chiefly remembered for his informal teaching in the theatre and out-patient department at St. Peter's. Visitors of all sorts, from third-year students to postgraduates and practitioners of many years' standing, were encouraged to come in at out-patient sessions whenever they wished, and they never departed without learning something new. Thousands will remember his homely illustration of litholapaxy performed on a piece of chalk in the hollow of a student's hand. To those who took a quick peep through a cystoscope he would say, "Take it yourself, look all round, find both ureters." His patience and courtesy to the ignorant and muddle-headed type of students were exemplary. Swift Joly had a great talent for inventing and improving instruments. His cystoscope and urethroscope are universally known and used. Many will also be familiar with his bladder retractor, needle-holder, and his connexion for use with Marion's suprapubic tube. He had a very wide knowledge of physics and chemistry and won the large gold medal for chemistry at Trinity College, Dublin. In his youth he was a noted cross-country runner and a keen fisherman. In the last ten years of his life he took up mountain climbing and ascended the Dent Blanche (14,300 ft.) at the age of 61. He was an enthusiastic photographer, and his collection of Alpine photographs has been considered by his friends to be as good as that of F. S. Smythe. He was also a keen Freemason and attained the dignity of London Rank many years ago.

The tragic death of Dr. BETTY GREGORY came as a great shock to her friends, many of whom saw her apparently fit and well on Christmas Eve and heard with amazement that as a result of a massive pontine haemorrhage she died in her sleep a few hours later. Dr. Gregory graduated M.B., Ch.B. at the University of New Zealand in 1932. She was president of St. Margaret's Residential College for Women in Dunedin, took a prominent part in the social and sporting life of the University, won her blue in hockey, represented the University at lawn tennis, and was one of the best-known and most popular undergraduates of her time. After graduation she held resident posts in New Zealand and England before fulfilling her life-long ambition of working in India, where at first she worked under the Scots Mission at the Women's Hospital, Ajmere, and then went to the Lady Hardinge Medical College for Women at Delhi. On returning to England she held a resident post at the Oxford Eye Hospital, took her Diploma in Ophthalmology, and in more recent months has been working with the Oxford Nutritional Survey. She returned to Oxford a week before Christmas to await the arrival of her baby in February. Dr. Gregory will be much missed by that wide circle of friends in Australasia, India, and Great Britain who had learned to appreciate her great qualities.

By the recent passing of GARDINER WILLIAM TROUTON at the ripe age of 85 Rotherfield has lost an ideal general practitioner, for he possessed a fund of knowledge of humanity and the ailments it is heir to, their prevention and their treatment. Qualifying M.B., B.Ch. of Trinity College, Dublin, in 1888, and holding thereafter appointments, he took his degree of M.D. in 1894. Settling in Sussex, he soon won the respect and the affection of a very wide circle of patients and friends. His courtesy, his infinite care, and his fresh appreciative humour made him indeed a beloved and trusted physician for over thirty years before his retirement. He was chairman and the moving spirit of the Rotherfield Branch of the British Legion, for which post he was admirably fitted on account of his long association with the West Kent Yeomanry. Although over age in the last war, he served throughout the campaign in Egypt, and was present at Gallipoli, thereby securing the coveted Territorial Decoration. A staunch churchman, he was a churchwarden for many years, and gathered round him a following of keen men in the parish of Rotherfield. One of his children has followed her father as a medical practitioner.—W. McA. E.

Dr. JOHN CHRISTOPHER THOMSON, who died at his home in Edinburgh on Dec. 19, aged 80, was born and educated in Lockerbie and later studied arts and medicine at Edinburgh University. He held the following degrees and diplomas: M.A. 1884; M.B., C.M. with honours, 1888; M.D., 1892; D.P.H.Ed. and Glas., 1904; and D.T.M.&H.Camb., 1904. In 1888 Dr. Thomson went to Hong Kong to take charge of the Alice Memorial Hospital, London Missionary Society, when plague was raging in the Colony; he had gained such honour and affection from the leading Chinese that by their special request he was invited to join the Government Medical Service in order to organize measures against plague. From 1897 till his retirement, owing to ill-health, in 1909, he did valuable work in antiplague and antimalaria measures, in connexion with which he was twice mentioned in dispatches. He held many public offices, among those of J.P., president of the Hong Kong Branch of the B.M.A., and hon. secretary of, and lecturer in, the Hong Kong College of Medicine. His work in connexion with the last brought him one of the most interesting contacts of a long and varied career, for he had as one of his students for three and a half years the great Chinese reformer, Dr. Sun Yat Sen, and as secretary of the College prepared the medical diploma which was presented to him in the City Hall by Sir William Robinson, the then Governor of the Colony. From his retirement in 1909 until 1923 Dr. Thomson was

engaged in public health work in this country. Among other things he acted as tuberculosis officer for the County of Dumfries and for the Borough of Fulham. Dr. Thomson's outstanding quality was the complete integrity of his mind and character. Inaccuracy of statement and unethical conduct were equally repugnant to him; he was a quiet man, of gentle and courteous manners, and possessed of unfailing tact, but his opinions were definite, and he could be entirely firm when occasion demanded it. His culture and intelligence were high, and it was an education and a pleasure to know him. He had an unusually harmonious family life, marred only by the premature deaths of his two daughters, Dr. Elsie and Dr. Ruby Thomson. He is survived by his son, Dr. Frank Thomson, Dundee, and by his widow, for whom the deepest sympathy is felt by their many friends.

Medico-Legal

ASSESSMENT OF BLOOD-GROUP EVIDENCE

Blood-group evidence can show in certain circumstances that a given man is not the father of a given child. An immense amount of work has been done on its scientific foundations, and in the hands of an expert it approximates as nearly to certainty as does any other kind of scientific evidence. On the whole, English courts have been quite ready to accept it when it has been available—in fact, some critics have complained that the experts have had too much of their own way. A case recently heard by Mr. Claud Mullins at the South-West London Police Court indicated the place which such evidence should properly take in our judicial system. The case was not the usual bastardy application, but a summons by a wife against her husband for maintenance. They had been married two or three years, but because each had a war job in different parts of the country they had never made a home together. The husband, however, visited her whenever possible. At the beginning of March, 1943, she bore a child. The husband expressed pleasure on hearing it was coming, and paid all the hospital fees. Two months later, however, he stopped sending her remittances, which had before then been regular, and denied paternity. His solicitors suggested a blood test; the wife, indignantly repudiating the suggestion of adultery, consented. Dr. David Harley, who tested the bloods, found that the husband's group was OM, the wife's AM, and the baby's AMN. Apparently the N factor must have come from another man. Dr. Harley's evidence was the husband's sole reason for opposing the wife's application; he produced no evidence of adultery and did not even name an adulterer, and his reason for disputing paternity never appeared. He was not allowed, under the rule in Russell *v.* Russell (1924) A.C. 687, to deny that he had had access to his wife at the material, or any, time. At first Mr. Mullins was inclined to think that, albeit very reluctant, he was bound in law to accept the result of the blood test, not because as a man he thought the doctor was right but because as a magistrate he thought that the evidence was legally convincing. Moreover, he recalled that the Select Committee of the House of Lords had published in its report on Lord Merthyr's Bastardy (Blood Tests) Bill, 1939, some very dogmatic statements on the reliability of the test.[1] Later in the case, however, after the wife's sister, with whom she lived, had given evidence that the husband had visited the wife at the time when conception probably took place, and after the husband had been closely cross-examined, Mr. Mullins indicated that he was not prepared to bastardize the child on blood-group evidence alone. He did not, having heard and seen the wife, think she was of a type that commits adultery. The legal presumption that a child born in wedlock is legitimate is very strong, and he was not prepared to upset it solely on scientific evidence. The husband thereupon agreed to make a home for his wife, maintain her and the baby, and accept it as his child. Few who heard the decision doubted its wisdom. It would be an evil day for our courts if they ever felt obliged to elevate scientific evidence into a class by itself, instead of, as at present, keeping it on the same footing as other evidence.

[1] *British Medical Journal*, 1939, **2**, 453.

The Services

Major (temp. Lieut.-Col.) W. L. Brown has been awarded the D.S.O., and Capt. (temp. Major) M. E. M. Herford, M.B.E., M.C., R.A.M.C., a bar to the M.C. in recognition of gallant and distinguished services in Italy.

Major (temp. Lieut.-Col.) I. Fraser, O.B.E., R.A.M.C., has been awarded the D.S.O. in recognition of gallant and distinguished services in Sicily.

Temp. Surg. Lieut. W. B. Wallace, R.C.N.V.R., has been mentioned in dispatches for services in caring for the wounded in H.M.C.S. *Athabaskan* after his ship was attacked by aircraft.

CASUALTIES IN THE MEDICAL SERVICES

Missing, presumed to have lost his life.—Temp. Surg. Lieut. A. D. Bone, D.S.C., R.N.V.R.

Died from injuries received whilst attempting to reach British lines in Italy.—Capt. E. T. M. Smith, R.A.M.C.

DEATHS IN THE SERVICES

By the death on Dec. 24 at Bickington, Devon, of Major-Gen. Sir FOSTER REUSS NEWLAND, K.C.M.G., C.B., C.M.G., A.M.S.(ret.), the dwindling band of officers of the old Army Medical Service has lost a distinguished member a few days before reaching his 82nd birthday. His father was a doctor, and he was educated at Shrewsbury and Trinity College, Dublin, at the latter of which he took the M.B., B.Ch. degrees in 1885. He accepted a commission in the Army Medical Service in the following year, and went on service to India. He served throughout the South African War and won the Queen's medal with five clasps. In the war of 1914–18 he served in France up to 1917, when he went to Italy as D.M.S., and from 1918 to 1922 he held the same administrative rank in Egypt until his retirement in the latter year. He was mentioned in dispatches seven times during the last war, and for his various services he was successively awarded the C.M.G. in 1917, the C.B. in 1918, and the K.G.M.G. in 1919. Other distinctions included the honorary degree of M.D. of Trinity College, Dublin, in 1931; Commander of the Order of St. Maurice and St. Lazarus, Italy; Knight of Grace of the Order of the Hospital of St. John of Jerusalem in 1918; and Silver Medal "Al Milito della Sanita Publica," conferred on him by the King of Italy in 1912. In 1918 he married the daughter of an Italian general, by whom he had one daughter.

Major-Gen. GEORGE SOMERS MCLOUGHLIN, C.M.G., D.S.O., R.A.M.C.(ret.), died on Dec. 27, 1943, aged 76. He took the M.B. Durham in 1888 and the B.S. in 1889, and entered the Army Medical Service in the following year. In 1897–98 he served in Uganda and was awarded the D.S.O. and the 3rd class Brilliant Star of Zanzibar, and in 1900–1 won the Queen's medal with four clasps in the South African War. His next active service was with the B.E.F. in France in the 1914-18 war, where he was A.D.M.S. to the Guards Division until 1917, when ill-health necessitated his return to England, and he was mentioned in dispatches and awarded the C.M.G. In 1922 he retired with the rank of major-general.

Universities and Colleges

UNIVERSITY OF LONDON

The following candidates have been approved at the examinations indicated:

M.D.—*Branch I (Medicine)*: L. P. R. Fourman, B. F. B. Russell, A. Wardale. *Branch II (Pathology)*: R. M. Haines. *Branch V (Hygiene)*: I. G. Davies.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a quarterly meeting of the Council held on Jan. 13, with Sir Alfred Webb-Johnson, President, in the chair, a resolution of condolence was passed on the death of Dr. G. C. Anderson, Secretary of the British Medical Association. It was reported that Prof. G. Grey Turner had consented to deliver the Hunterian Oration for 1945. The Council agreed that the President should serve as an *ex officio* member of the Committee of Management of the Royal Medical Benevolent Fund. Diplomas of Membership were granted to B. Haigh, A. Taylor, and Margaret R. Todd.

Diplomas were granted, jointly with the Royal College of Physicians, as follows:

DIPLOMA IN PUBLIC HEALTH.—J. C. Boyle, Marjorie Swain.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.—Elizabeth G. W. Barker, H. Coates, Esther A. Davidson, J. E. Glancy, R. Krambach, H. G. Miller, Margaret V. Saul, G. C. Tooth.

DIPLOMA IN LARYNGOLOGY AND OTOLOGY.—F. Bauer, G. A. Coggin, K. W. MacKenzie, P. C. Rushton, J. A. B. Thomas.

No. 52

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Jan. 1.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1944 (a)	(b)	(c)	(d)	(e)	1943 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	73	7	30	7	4	95	5	18	2	6
Deaths		—	2				1	1		
Diphtheria	578	32	171	90	35	939	59	219	95	40
Deaths	10	2	2	3	—	29	2	3	3	—
Dysentery	89	18	71	—	—	95	14	27	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	3	—	1	—	—	2	—	1	—	—
Deaths		—					—			
Erysipelas			71	7	2			50	11	—
Deaths		1					—			
Infective enteritis or diarrhoea under 2 years				3					38	
Deaths	53	7	6	17	2	45	5	4	20	3
Measles	546	67	18	58	—	14,989	742	218	16	24
Deaths	1	—	—	—	—	43	1	4	—	—
Ophthalmia neonatorum	60	2	11	—	—	74	7	23	1	2
Deaths										
Paratyphoid fever	5	—	1	—	—	7	—	—	—	—
Deaths	—	—	—		—	—	—	—		—
Pneumonia, influenzal*	1,997	127	94	19	7	936	60	8	3	4
Deaths (from influenza)	464	56	23	10	5	44	5	3	—	—
Pneumonia, primary			535	22				179	28	
Deaths		99		22	21		43		22	7
Polio-encephalitis, acute	—	—				1	—			
Deaths		—					—			
Poliomyelitis, acute	6	—	—	1	—	4	—	2	7	1
Deaths		—					—			
Puerperal fever		3	17		1		8	15		—
Deaths										
Puerperal pyrexia†	150	7	19	—	3	165		13	1	2
Deaths		—								
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	2,029	148	256	26	76	2,159	141	287	70	61
Deaths	—	—	—	—	—	3	—	—	—	—
Smallpox	—	—	—	—	—	1	—	1	—	—
Deaths			—	—	—				—	—
Typhoid fever	7	—	—	8	3	6	2	1	5	2
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—			—	—	—
Whooping-cough	1,509	171	73	43	23	1,187	78	22	31	12
Deaths	14	4	9	2	—	14	2	1	2	—
Deaths (0–1 year)	459	58	80	46	22	409	50	48	64	38
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	6,904	1,134	781	295	176	5,119	784	553	272	155
Annual death rate (per 1,000 persons living)			17·6	19·4	‡			12·4	18·2	‡
Live births	5,886	788	869	346	288	6,131	775	786	379	302
Annual rate per 1,000 persons living			17·7	22·7	‡			16·3	25·3	‡
Stillbirths	181	16	35			234	25	30		
Rate per 1,000 total births (including stillborn)			39					37		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes puerperal fever for England and Wales and Eire.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* the incidence of the common infectious diseases of childhood rose during the week: scarlet fever by 243, whooping-cough by 265, measles by 183, and diphtheria by 80. The notifications of acute pneumonia fell by 82.

In the great towns there were 464 deaths from influenza—that is, 226 fewer than in the preceding week. (For the week ending Jan. 8, influenza deaths numbered 255.) The largest numbers of deaths were recorded in London 56, Liverpool 22, Sheffield 19, Birmingham 16, Manchester 15.

The bigger numbers of cases of the common infections end the recent downward trend. Measles and whooping-cough had fallen in incidence continuously for the past six weeks and scarlet fever for the past four. Scarlet fever rose most steeply in Lancashire by 65 and in London by 61. The rise in whooping-cough occurred mainly in the south, London and the south-eastern counties having 155 cases more than last week. Measles was up in Lancashire by 48, in Hereford by 36, and in London by 31 cases. The increase in Hereford was due to an outbreak in Leominster and Wigmore R.D., with notifications going up from 2 to 35. The only increases of note for diphtheria were in Lancashire, 34 more, and in Warwickshire, 22 more cases.

The notifications of dysentery, 89, which were 7 fewer than in the preceding week, were the lowest for the past eight months. The chief centres of infection were Lancashire 20, and London 18.

In *Scotland* increases were recorded for diphtheria 37, and scarlet fever 14, while there were 57 fewer notifications of whooping-cough and 35 fewer of measles. There was a steep fall in influenza deaths in the 16 principal towns of Scotland: the totals for the past four weeks were 58, 52, 48, and 23.

In *Eire* notifications of measles rose from 28 to 58: Dublin C.B. 27, and Laoighis, Thomastown R.D., 20 notifications.

In *Northern Ireland* the relatively high incidence of diphtheria and scarlet fever was maintained: 46 of 76 cases of scarlet fever were notified in Belfast.

Vital Statistics

Although the vital statistics of 1943 will not be available for some months, it may be of interest, with the completion of the fourth war year, to compare the trends of infectious diseases as recorded in the weekly returns of the Registrar-General.

Notifications of Infectious Diseases in England and Wales

Disease	Average 1937–9	1940	1941	1942	1943
Diphtheria	58,500	46,683	51,091	42,318	35,944
Scarlet fever	91,158	65,573	69,111	84,932	116,217
Measles		407,908	406,507	285,300	374,198
Whooping-cough		53,403	171,406	65,563	95,859
Acute pneumonia	47,736	47,712	50,514	42,487	52,225
Cerebrospinal fever	1,319	12,791	11,119	6,089	3,380
Dysentery	3,413	2,843	6,597	7,177	7,772
Paratyphoid and typhoid	1,676	2,824	4,703	887	707

Births and Deaths in the Great Towns of England and Wales

	1940	1941	1942	1943
NUMBER OF DEATHS				
All causes	307,544	267,683	231,579	247,968
Influenza	5,510	2,993	1,544	6,280
Paratyphoid and typhoid	56	79	38	26
Scarlet fever	80	58	55	69
Whooping-cough	356	1,205	468	605
Diphtheria	1,409	1,530	987	759
Measles	485	503	293	397
Diarrhoea and enteritis under 2	1,812	1,947	2,283	2,569
DEATHS PER 1,000 CASES				
Paratyphoid and typhoid	44	31	111	101
Scarlet fever	2·5	2·1	1·3	1·2
Whooping-cough	14	16	14	12
Diphtheria	54	54	39	36
Measles	2·7	3·4	1·8	2·5
No. of live births	309,730	262,273	303,114	326,175
Deaths under 1 per 1,000 live births	62	70	58	58
Stillbirths per 1,000 total births	39	38	37	33

The declining trend of diphtheria is, perhaps, the most satisfactory feature of the returns, but it is evident that the campaign for immunization must still be vigorously prosecuted.

Cerebrospinal fever is gradually falling to its pre-war level. The small numbers of paratyphoid and typhoid fevers during the past two years are a matter for satisfaction, but the steady rise in the incidence of dysentery during the war is not. The origin of many of the outbreaks of dysentery has been traced to contaminated food. The notifications of scarlet fever during 1943 reached a very high level.

A comparison between years is made difficult by the changing population due to evacuation. The increase in the paratyphoid and typhoid case mortality was due to a relatively greater decrease in paratyphoid than in typhoid—that is, the smaller number of cases of these diseases in 1942 and 1943 contained a much higher proportion of typhoid fever than in 1940 or 1941. There has been a serious rise in childhood mortality from diarrhoea and enteritis. The case mortality of diphtheria shows a substantial improvement.

The Week Ending January 8

The returns of infectious diseases in England and Wales during the week included: scarlet fever 1,791, whooping-cough 1,793, diphtheria 661, measles 515, acute pneumonia 1,608, cerebrospinal fever 92, dysentery 165, paratyphoid 4, typhoid 4. Influenza deaths in the great towns numbered 255.

Medical News

More than two thousand British and Allied doctors and surgeons and members of hospital staffs are being invited to see the British Council film, "Surgery in Chest Diseases," at the Philharmonic Hall, Liverpool, on Thursday, Jan. 27, at 4.30 p.m. Doctors and members of hospital staffs requiring tickets should communicate with the Liverpool Medical Institution or the British Council, 1, Basnett Street, Liverpool, 1.

A meeting of the Council of the Medical Superintendents' Society will be held at the Midland Hotel, Derby, on Saturday, Jan. 29, at 2.30 p.m., and Sunday, Jan. 30, at 10 a.m.

A series of lectures on psychology, suitable for a Diploma in Psychological Medicine, will be held at the Maudsley Hospital, Denmark Hill, S.E.5, on Mondays, Wednesdays, and Fridays, from 2 to 4 p.m., beginning on Jan. 31 and ending on Feb. 21. The fee for the course is £3 3s., payable at the time of enrolment on Jan. 31. All inquiries should be addressed to Dr. W. W. Kay, acting hon. director of the Maudsley Hospital Medical School, Central Pathological Laboratory, West Park Hospital, Epsom. (Tel. Epsom 1408.)

As announced on Jan. 8 (p. 67) the next special film session for doctors and allied personnel will be held at the Odeon Theatre, Broadmead, Bristol, on Sunday, Feb. 6, at 10.45 a.m. An additional film to be shown is the British Council film "Surgery in Chest Diseases."

The Royal Institute of Public Health and Hygiene has arranged a series of lectures on "The Public Health" to be given at 28, Portland Place, W., on Wednesdays, Feb. 9 to March 29, at 3.30 p.m. Admission is free and applications for seats should be made to the secretary.

The Society of Thoracic Surgeons of Great Britain and Ireland will hold a meeting at the Royal Society of Medicine, 1, Wimpole Street, London, W., on Thursday, Feb. 10. At 9.30 a.m. the subject for discussion will be carcinoma of the oesophagus, and at 2 p.m. the subject will be lung abscess. Visitors of the British, Dominions, and Allied medical services, and general surgeons of the E.M.S., will be welcome after obtaining permission from their own higher authorities.

A refresher course in tuberculosis for tuberculosis officers and medical practitioners will be held in Liverpool on Monday, March 27, to Friday, March 31, inclusive. It is being arranged by the committee on education of the Joint Tuberculosis Council and National Association for the Prevention of Tuberculosis, in collaboration with the City Public Health Department and the University of Liverpool. Details of lecturers and subjects will be announced later. The fee for the course is £4 4s., payable in advance. Early application should be made to Dr. Harley Williams, Tavistock House North, Tavistock Square, London, W.C.1, from whom all information may be obtained.

The name of Dr. George Paterson Burr appears in a list of names published by the *London Gazette* as commended for brave conduct when their ships encountered enemy ships, aircraft, submarines, or mines.

There will be found in our advertisement columns this week an advertisement for the post of temporary Assistant Secretary of the British Medical Association.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS should communicate with the Secretary of the Journal Board, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS should be addressed to the Advertisement Manager (hours 9 a.m. to 5 p.m.). Members' subscriptions should be sent to the Secretary of the Association.

TELEPHONE NO.—B.M.A. and *B.M.J.*: EUSTON 2111.

TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London*; SECRETARY, *Medisecra Westcent, London*. ADVERTISEMENTS, *Articulate Westcent, London*.

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

ANY QUESTIONS?

Some Unqualified Practitioners

Q.—*I should appreciate a short statement as to the differences between, and the beliefs forming the basis of, the following forms of unqualified practice: (a) osteopathy, (b) chiropractic, (c) manipulative surgery, (d) bone-setting.*

A.—Osteopathy and chiropractic are both complete systems of "medicine." In osteopathy the theory is that the structural integrity of the mechanism of the body is the most important single factor in maintaining health, and consequently that structural derangement is the predisposing cause of disease. Any tissue may be perverted, but owing to the intimate relationship of the spinal column to the nerves and the vascular system this is the region most often under suspicion. Investigation of what by this "philosophy" are considered to be secondary effects—e.g., chemical, microscopical, bacteriological changes, etc.—follows orthodox lines, but treatment is essentially manipulative to the allegedly perverted or displaced structure. The founder of osteopathy was an orthodox practitioner, Dr. Still of Kansas, and the first school of osteopathy was opened in 1892.

In chiropractic the emphasis falls upon displacements of the vertebrae, which produce pressure effects upon the nerves and so interfere with the "nerve force" which should flow freely from the brain to the rest of the body if health is to be maintained. Any peripheral effects are thus secondary to the interference with the nervous outflow. The displacements are usually detected by palpation of the spine; the replacement is also manual.

Both osteopathy and chiropractic are much more extensively practised in the U.S.A. than in this country, and in most of the States both are recognized and regulated by law. Their relative numbers and growth are illustrated by the following figures:

Osteopaths (world) .: 1921: 7,000; 1925: 9,000) graduates of
Chiropractors (U.S.A.) 1921: 10,000; 1926: 25,000) recognized schools

Manipulative surgery is that form of treatment by manipulation for various local lesions practised by orthodox surgeons—it is indeed doubtful if an unqualified person can legally call himself a manipulative *surgeon*. No general philosophy of disease as a whole enters into the application of this form of corrective treatment.

Bone-setting is a loose term which defies definition. An orthodox orthopaedic surgeon is obviously often a bone-setter in the truest sense, but the term is usually applied to an unqualified practitioner who claims to cure certain painful and disabling manifestations, usually in joints or muscles, by varying forms of manipulation and adjustment, most of which he regards as secret and peculiar to himself and his fellows. Concisely, a bone-setter is an unqualified manipulator, who may or may not know something of the underlying pathology, physiology, and anatomy of the condition which he treats. The manipulations are usually standardized for each individual joint or region, and, in order to avoid possible legal penalties for damage done, many of the better-known practitioners refuse to treat any case which shows definite physical signs—e.g., *x*-ray changes, etc.—of organic disease.

Control of Tuberculous Patients

Q.—*(1) Can any control be exercised over the place of residence of people suffering from tuberculosis of the lung? (2) For example, can such patients live in residential flats? (3) Are they kept under any supervision as to infectivity?*

A.—The general powers of local authorities, and the obligations imposed on infectious persons for preventing the spread of infection, contained in the Public Health Act, 1936, apply only in the case of sufferers from the diseases mentioned in that Act and from any diseases to which these powers and obligations are extended by

Orders or Regulations. These powers and obligations are not included in the Regulations under which tuberculosis has to be notified, but which make it the duty of the medical officer of health to "make such inquiries and take such steps as are necessary or desirable for investigating the source of infection, for preventing the spread of infection, and for removing conditions favourable to infection." It will be noted that no obligation is placed on the infectious person himself, and as the M.O.H. is instructed by the Regulations that every notification of tuberculosis and every document relating thereto are to be regarded as confidential, it is obvious that restrictive measures involving exposure of their state are not intended to be applied to patients. Certain sections of the Public Health Act may, however, be applied compulsorily. A local authority may enforce periodical disinfection of houses, rooms, and articles for any infectious disease, including tuberculosis. An L.A. may also apply to a court for an order for the compulsory removal to hospital of an open, demonstrably infectious case of pulmonary tuberculosis if precautions against the spread of infection are not or cannot be taken, if other persons are therefore at risk, and if there is accommodation available for the patient in an institution. This procedure has generally been regarded as unworkable under present conditions, especially with the shortage of beds for even those infectious cases desiring admission, and has never, or practically never, been used.

The answers to the questions are therefore (1) virtually none; (2) yes; (3) they are visited by tuberculosis visitors who advise and assist them in maintaining their own health and preventing the spread of infection to others. If the M.O.H. learns from any source that the habits of an infectious person are specially dangerous to others he will no doubt instruct the visitors to put pressure on the patient to behave more hygienically; perhaps, in cases of gross negligence, reinforcing the admonition by a threat that the above-mentioned power of removal will be used.

Vitamin D in Arthritis

Q.—*I understand that large doses of vitamin D have been used with alleged success in the treatment of osteo-arthritis. Is there any satisfactory evidence that it is of use in this or in any rheumatic conditions, and, if so, in what doses should it be prescribed?*

A.—There is no satisfactory evidence that vitamin D is of any service in osteo-arthritis, and since its action tends to improve calcium assimilation and thus to lead to increased bone density, it would appear to be contraindicated unless senile osteoporosis is the dominant feature rather than the hypertrophic changes and increased bone density of true osteo-arthritis. Reed, Struck, and Steck (*Vitamin D*, Chicago, 1939) treated a mixed group of arthritics with huge doses of vitamin D, 150,000 to 200,000 international units daily, and noted measurable improvement in 74.5%. They do not state in which type of arthritis this occurred, but of the 45 cases only 7 were of the hypertrophic type, and it seems probable that the improvement was in the other types. The use of vitamin D in rheumatoid arthritis in which atrophic changes and osteoporosis are features is a sound therapeutic measure in moderate dosage, 400 to 600 i.u. daily. A popular journal has recently reported remarkable beneficial effects in America from the use of a special form of vitamin D which is prepared by passing a current of electricity through ergosterol instead of irradiation with ultra-violet rays; with this method the toxic effects liable to result from heavy dosage of the vitamin are said not to occur; the benefit was in rheumatoid arthritis and not in osteo-arthritis. I am unaware of any confirmation of these results up to the present.

Inheritance of Diabetes

Q.—*A youth of 18, in good general condition and free from symptoms, has been put in Grade 4 by a medical board because of diabetes. He has been advised to take a high-carbohydrate diet with zinc-protamine-insulin daily. His sister, aged 12, is a diabetic and has been on insulin for some time past. He hopes to marry, and asks: (a) Would his wife's prospects of happiness in marriage be affected by his having diabetes? (b) Are his chances of begetting children affected? (c) Is he likely to transmit to his children a tendency to the disease?*

A.—In *The Diabetic Life* (J. and A. Churchill. 12th edition, 1941, p. 125) R. D. Lawrence writes: "Formerly, in severe diabetes, men were usually impotent and women ceased to menstruate, but insulin usually restores a normal sexual life. Marriage is not dangerous to men, but if a *family history* is present, full family histories on *both* sides should be got, the hereditary nature of the case must be considered, and the possibility of the child developing diabetes. . . . When the doctor has pointed out the hereditary possibilities after a full pedigree on both sides has been studied, the parents must take the responsibility of decision, as there are no laws of national eugenics, nor, indeed, any certain laws of diabetic heredity." Some of the factors affecting happiness in marriage would be the reduced expectation of life (intercurrent diseases such as tuberculosis) and the trouble of providing suitable diet. The risk of invalidism should not be great. The case would be affected by the economic circumstances and intelligence of the patient. An intelligent man in a good social position might make a success of it, but a dull man in a poor home would be a different matter. As the quotation from *The Diabetic Life* suggests, the chances of begetting children are probably unaffected.

Diabetes, or at least the tendency to develop it, is certainly inherited. As yet, however, there is no general agreement as to the mode of transmission, and in any case it is probable that only some of the bearers of the gene or genes develop the condition—i.e., the co-operation of other factors is necessary if the condition is to become manifest. It would probably be generally agreed that the chance of any particular child being affected is not greater than 1 in 10, and may be considerably less.

Hodgkin's Disease and Leukaemia

Q.—*Could you inform me of the latest treatment for Hodgkin's disease and leukaemia?*

A.—The chief place in the treatment of Hodgkin's disease and of leukaemia is taken by *x*-ray therapy directed towards the relief of symptoms and the prolongation of life; supporting measures, including iron, arsenic, and ascorbic acid, should not be neglected. Expert pathological diagnosis is essential in Hodgkin's disease, as this term is often used to include not only lymphadenoma verum, but all the lymphadenopathies, from the benign lymphoid follicular reticulosis (which seldom requires *x*-ray therapy) to the very malignant reticulo-sarcoma (which requires the most intensive *x*-ray therapy). In an early case of lymphadenopathy, where the involvement is limited to a single group of superficial lymph nodes, excision preceded and followed by a relatively large dose of radiation may result in cure—or at all events disappearance of the disease for a long period. At the other extreme, with generalized disease, the prospect of worth-while palliation need seldom be abandoned.

In splenic irradiation for chronic leukaemia the longest remissions will be obtained if the white cell count is brought down to 6,000 per c.mm.; the practice of stopping *x*-ray treatment when this comes down to about 20,000 should be condemned. Many cases of chronic lymphatic leukaemia are symptom-free, and do not need irradiation simply because there is an increased lymphocyte count. All cases of chronic myeloid leukaemia require irradiation when the myelocyte count begins to show a progressive increase.

Radio-active phosphorus (by mouth or by injection) gives results in leukaemia similar to those of *x*-ray therapy, but supplies are not available in this country, as our cyclotrons are engaged on war-work (see *Radiology*, 1942, **39**, 573, for American results).

Spina Bifida and Incontinence

Q.—*A boy aged 8 suffers from permanent incontinence of urine and faeces following nerve damage during an operation for a spina bifida and meningocele of the lumbar region associated with hydrocephalus. Would this boy's condition be improved if the ureters were transplanted into the colon and a permanent colostomy performed?*

A.—The effect of transplanting the ureters would be to render the control of the outflow of urine more difficult than ever, and to increase the risk of pyelitis. The permanent colostomy would add a further nursing difficulty without improving the rectal condition, since urine would pass more freely to the anus than to the colostomy opening. Regular wash-outs should control the rectal incontinence by keeping the lower bowel empty. The urinary incontinence can be managed by means of an apparatus to collect the urine, either with or without a suprapubic cystostomy.

Anaesthesia for Cystoscopy

Q.—*Is pentothal sodium a suitable anaesthetic for use (a) during cystoscopic examination of tuberculous bladders, (b) for over-distension of the bladder, (c) for cystoscopic examination in patients who have a cough from any cause? In the first two types of case I have failed to obtain complete immobility and absolute relaxation; in type (c) cough is liable to occur, and I am under the impression that it cannot be suppressed. I may add that I am using a 2½% solution in out-patients who are unpremedicated.*

A.—Pentothal (or the other ultra-short-acting barbiturate, hexobarbitone) if given in sufficient quantity will provide satisfactory anaesthesia for cystoscopy in the medical conditions described. Whether or not it is suitable for *out-patients* depends on how long the patient is to be kept anaesthetized, and this in turn is associated with the dexterity of the surgeon and his being ready to introduce the cystoscope immediately anaesthesia is induced. These factors decide the amount of pentothal which will be used, and this determines the time taken by the patient before he is ambulatory. Moderately deep anaesthesia is needed to relax the sphincter of the bladder and to prevent the patient reacting to the stimulus of the cystoscope. Deep anaesthesia need be of only extremely short

duration—the actual time for the introduction of the cystoscope into the bladder—and is obtained by the rapid injection of a small quantity of pentothal, say, 0.3 to 0.4 g. The syringe and needle are kept *in situ*, and once the cystoscope is inserted only enough additional pentothal is given to keep the patient quiet. However, if more than half a gramme is used, as is likely if it is given slowly to unpremedicated out-patients with irritable bladders, the recovery time will probably be prolonged enough to put its use for out-patients out of court.

On the whole pentothal should be used for out-patients *only if it is given in a small dose rapidly*. This provides a short period of deep anaesthesia, but, even after this, adequate facilities for recovery must be afforded.

Hormones and Cancer

Q.—*As stilboestrol is apparently used with success for the treatment of prostatic carcinoma, is there any evidence that the prolonged administration of testosterone propionate may be useful in cases of cancer of the breast or of the uterus?*

A.—I cannot see the analogy between treating carcinoma of the prostate with stilboestrol and treating carcinoma of the breast with testosterone propionate. Unfortunately it is possible to find articles and letters in the literature describing isolated cases treated apparently successfully with every hormone preparation known. There is no incontrovertible evidence that testosterone propionate is of any value in the treatment of carcinoma of the breast.

INCOME TAX

Partnership—Expenses of New Partner

"LAMBDA" joined a partnership on Jan. 1, 1943, in replacement of a partner who left the practice on Sept. 30. "Each partner claims his own expenses." The inspector of taxes has agreed to allow "Lambda" the expenses of the outgoing partner for the previous year, but in fact these expenses cover a period of nine months only.

*** The root difficulty here is that a partnership is assessable to tax for any year in one sum on the amount of the *profits of the firm* for the previous year. In arriving at that amount the expenses deducted can reflect only nine months' expenses of the outgoing partner, though if a locumtenent was employed by the firm in the interval of three months that expense is also deductible. Consequently what is really the only way by which "Lambda" can have the equitable arrangement he desires—i.e., the allowance of a year's expenses from his share of the gross receipts—is by some re-allocation of the gross receipts among the partners themselves.

Diploma Expenses

R. H. incurred expenses in taking a special examination. Can they be regarded as deductible in calculating practice profits?

*** No. There are two grounds of objection: (1) that such expenses are personal and not incurred in the carrying on of professional work, and (2) even if that were not the case such expense is of a capital nature, as improving the knowledge of the practitioner.

LETTERS, NOTES, ETC.

Parotitis following Trilene

Dr. F. G. PATTRICK writes: Recent correspondence concerning trigeminal paralysis caused by trilene anaesthesia prompts me to inquire whether any anaesthetist has noticed swelling of the parotid glands following its use. Some months ago I gave an anaesthetic consisting of nitrous oxide, oxygen, and trilene to a boy of 9 for the removal of a leg plaster. The anaesthetic lasted about 15 minutes, and the child's recovery was uneventful, but about half an hour afterwards his neck became swollen and painful. When I saw him some 3 hours later he had the typical appearance of a child with mumps. The swelling, which was painful and tender, gradually subsided during the next 24 hours. I have found reference in the literature to bilateral parotitis following anaesthetics, but it has been attributed to the atropine premedication. This patient had no atropine previously, so I can only conclude the anaesthetic itself was responsible for his parotitis.

When the Stethoscope should be left in the Bag

Dr. G. H. GRANT DAVIE writes: I have just recovered from acute bronchiolitis. This was accompanied by frequent irritating coughs induced by bronchial and tracheal gurglings, profuse frothy, sticky, mucopurulent spit, with a maximum temperature of 102°, and, what is not so often described, the presence of an uncomfortable dull rending intrapulmonary pain as though the lung was being slowly torn apart. This reached a maximum sharp cutting type of pain when intrapulmonary pressure was raised by coughing or nose-blowing. Under treatment, in two to three days the acute symptoms lessen, temperature and pulse rate drop, respirations are less hurried and difficult, the pulmonary pain becomes more bearable, or perhaps is only apparent on intrapulmonary effort. These diminishing physical signs and symptoms should amply satisfy the physician in charge. But what is the procedure? Out comes the stethoscope, and the patient is put through a meticulous auscultatory examination involving inspiratory and expiratory effort over an appreciable period, at the end of which he is more or less panting, with increased cardiac rate, and shortly afterwards there is a return of the sickening intrapulmonary pain with increased exudation and cough. Thus physicians ignore the first principle of their teaching that an inflamed part should be kept at rest, and unwittingly cause their patients, who in turn do their best to help, the great disservice of compelling resolving bronchioles to work at pressure. Their clinical sense should tell them that all is well, and that the less disturbance these inflamed surfaces receive the sooner repair will take place, and, what is quite important, the comfort of their patients will be enhanced.

Rare Medical Books

There are several rarities to be sold at Messrs. Sotheby's auction room on Jan. 24–6, derived from a number of different collections. Interesting incunabula are the first edition, Bologna, 1487, of Savonarola's *De pulsibus urinis et egestionibus*; and a *Hortus Sanitatis*, Strasburg, 1497. There is a translation by William Ward of Alexis of Piedmont's textbook of diseases, 1595; and two London editions of Th. Barrough's *Method of Physick*, respectively 1590 and 1596. Earlier than these (London, 1552) is a slightly imperfect copy of the textbook of anatomy by Thomas Geminus: more covetable, perhaps, is the Southwark-printed, 1525, *Noble Experyence of the Vertuous Handywarke of Surgery*, whose author was Hieronymus von Braunschweig; and even rarer is a pharmacological treatise by the same author from the same press in 1530. The state of medicine and surgery in England and in France is compared by G. Arnaud in some memoirs, printed 1768, next to which may be mentioned Despierre's monograph on the diseases of sailors, Paris, 1767, and Rostinio's work on venereal disease, Venice, 1556; also from Venice, though not from the same printer, is Susio on fevers and bleeding, 1571. There are two books on preventive medicine by Trafichetti, 1565, and Fonseca, 1602; and in the same category, perhaps, can be placed Philip Moore's *Hope of Health, wherein is conteined a goodlie regimente of life*, London, 1564. This Moore was better known as an almanac producer and prognosticator, though whether he was the original Old Moore is not here affirmed. Among others of lesser interest one may just note two manuscripts. One is interleaved with the seventh edition, 1631, of the *Rich Storehouse or Treasurie for the Diseased*, by G. W. These leaves contain many prescriptions with the names of the seventeenth-century physicians responsible for them. The other is Richard Henshall's *New System of Health*, never published; it was composed in 1728 and dedicated to Drs. Henry Hall, Robert Bostock, and Richard Breech.

Resuscitation by Rocking for Heat-stroke

Dr. F. R. W. K. ALLEN writes from Poona: I have been following with interest the various modifications of stretchers for applying Eve's method of resuscitation culminating in the illustration on page 494 of your issue of Oct. 16, 1943. In case of heat hyperpyrexia there is always a danger of failure of respiration. If such cases are treated by Eve's method of resuscitation there will be no need for any interruption in the measures being taken for reduction of the temperature. Both can be carried out simultaneously. It appears that all "heat-stroke stations" should be supplied with a rocking device. I have not met with any support here, and so I should be grateful for your readers' criticism on the subject.

Delayed Menarche

Dr. E. FRIEDMANN writes from the Royal Free Hospital: Though it is quite true that the menarche delayed beyond the 16th birthday is not an abnormality in itself, nor does it necessarily cause trouble, there is, however, one important point that needs special emphasis. The girl may be physically well developed and show no signs of endocrine immaturity as the absence of the menstruation might suggest. But from the experience of hundreds of cases of sterility we know that there must be a definite relationship between the onset of the menarche and infertility. Quite a number of patients attending a sterility clinic are those who did not menstruate until the age of 17 or 18, although from then on they had no gross menstrual irregularity. If we consider the katamenia from this important point of view, I should think that a girl who has not started to menstruate by the age of 16 at the latest should be treated with thyroid, oestrone, and vitamins in an attempt to prevent the development of a hypoplastic uterus. The great urgency of the social problem of infertility should stimulate us to prevent rather than to cure any condition liable to lead to sterility.